Additional Analysis SHIP 2017

Definitions in this analysis:

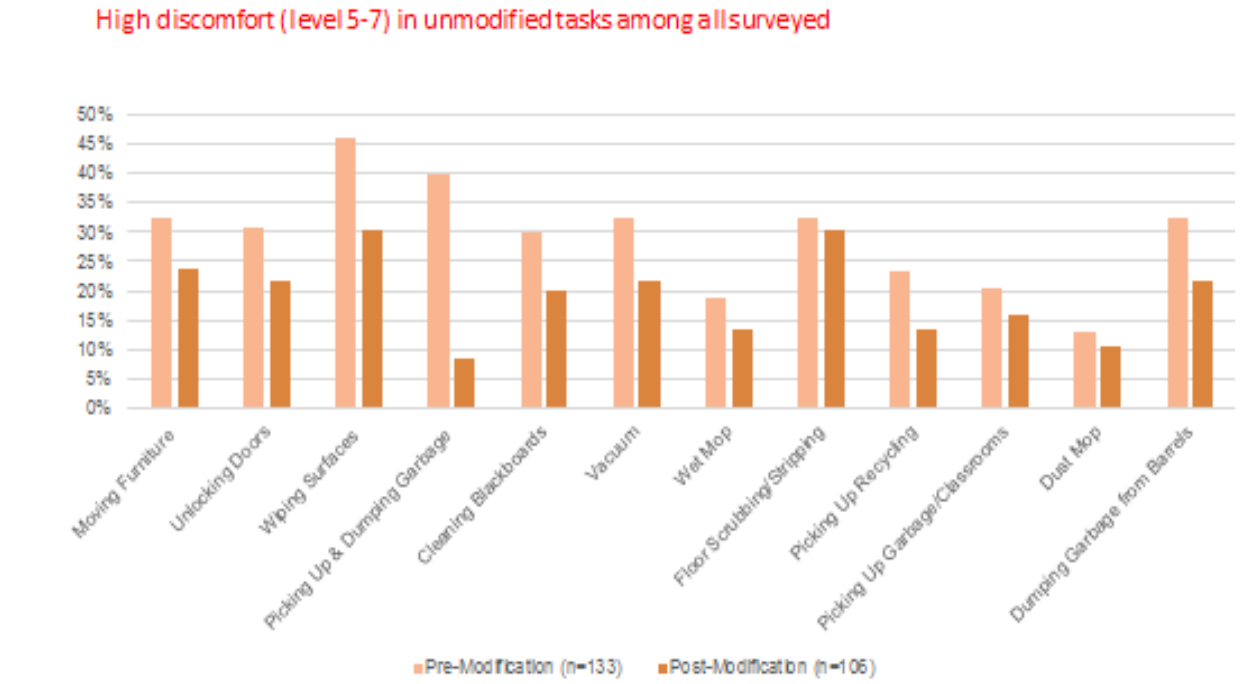
- High discomfort: 6 or 7 points on the discomfort scale (except where otherwise noted).
- Tall: 5'8" or taller

Addendum Results:

- We reviewed the previously calculated high discomfort levels among all surveyed (in this case levels 5-7 from the survey scale) in the unmodified tasks to help determine future priorities (Figure 1). Picking up and dumping garbage [dumpster and barrels] and wiping surfaces are the tasks causing the most discomfort. Also of interest is the degree of impact the school year has on the discomfort caused by these tasks, previously under-appreciated and that offers opportunities for other types of interventions. Although the original intent was to survey custodians during the school year, delays in obtaining modified tools, also delayed follow up survey administration. Initially we viewed this as a negative impact, however, looking at reported discomfort in trash-related tasks that were unmodified but included in both surveys at two different times, i.e. during the school year and after the school year, we were able to see the important discovery of the large impact of trash and recycling tasks on custodian discomfort. There is now a post-grant focus on additional ways to reduce discomfort associated with trash and recycling.
- Further comparison of demographics of participants in the pre- and post-surveys, indicates attrition was least likely among younger, less-experienced, or male workers, or those whose primary language was English. (Table 1)
- Average discomfort level was significantly higher at baseline for the modified tasks, but at follow-up was not significantly different from discomfort for the unmodified tasks. (Table2) This suggests that at follow up, discomfort was reduced to the level of unmodified tasks which were not addressed in this project because of their lower baseline discomfort level.
- Average discomfort level was reduced for all tasks, and for the modified and unmodified tasks measured separately. The reduction was twice as great for the modified tasks as for the unmodified tasks. (Table 2)
- The proportion of participants reporting any discomfort was reduced over all tasks and for modified and unmodified tasks separately. (Table 3)
- The proportion of participants reporting high discomfort was reduced by 18.6% on the modified tasks and 6.3% on the unmodified tasks. (Table 3)
- Participants who were at least 5'8" tall had significantly lower mean discomfort levels while dumping trash from barrels at both baseline and follow-up, and while dumping garbage at follow-up. (Table 4)
- The height advantage was significant for back discomfort while dumping barrels at baseline, but not at follow-up, or for shoulder discomfort at either time point. (Table 4) This suggests that the height advantage may be helpful in reduction of back discomfort but not shoulder discomfort in dumping trash from barrels.
- There were no significant differences by height in mean back or shoulder discomfort while dumping garbage into the dumpster. (Table 5) Although this is unexpected, it may suggest predominantly one

handed dumping garbage appears to cause back and shoulder discomfort regardless of the height of the custodian. Dumpsters are 4' tall and only 5% of the custodians exceed 5'10" in height. At baseline, participants whose primary language was not English were significantly more likely to report high discomfort (67.7% vs. 45.4%). At follow-up, reports of high discomfort among participants whose primary language was English remained relatively unchanged at 46.5%, while the reduction in high discomfort among people who primarily spoke a language other than English left it at a proportion (51.6%) not significantly different from that of English speakers. (Table 6). This suggests a possible benefit in training that was greater for non-English speakers.

FIGURE 1



Note: these percentages are from pre-mod and post-mod surveys for the number of people reporting high severity discomfort (5-7)out of the total n for each survey.

TABLE 1

Table 1. Demographic characteristics of custodial workers (Pre-Survey n=133, Post-Survey n=106)

	Pre-Modification Survey (n=133)		Post-Modification Survey (n=106)	
	n	(%)	n	(%)
Ages				
<40 years	10	(8)	9	(9)
40-49 years	29	(23)	21	(22)
50-59 years	51	(40)	42	(43)
60+ years	37	(29)	25	(26)
Missing	6	–	9	–
Sex				
Female	76	(62)	55	(58)
Male	47	(38)	40	(42)
Missing	10	–	11	–
Years Worked at Current Job				
0-5 years	26	(21)	27	(28)
6-10 years	24	(19)	18	(19)
11-15 years	26	(21)	19	(20)
16-20 years	29	(23)	15	(15)
21+ years	20	(16)	17	(18)
Missing	8	–	10	–
BMI				
Height				
Short (≤ 5'5 M/5'0 F)	27	(27)	29	(37)
Average	38	(39)	23	(30)
Tall (≥ 5'9 M/5'3 F)	33	(34)	26	(33)
Missing	35	–	28	–
Primary Language				
English	77	(62)	60	(66)
Other	48	(38)	31	(34)
Missing	8	–	15	–
Primary Handedness				
Right	113	(90)	79	(89)
Left/Both	13	(10)	10	(11)
Missing	7	–	17	–
Attended Training				
None	–	–	2	(2)
Some Trainings	–	–	36	(35)
All Trainings	–	–	66	(63)
Missing	–	–	2	–
Taken Survey Before				
No	125	(96)	33	(33)
Yes	5	(4)	68	(67)
Missing	3	–	5	–

TABLE 2

Average discomfort level (0-7)

	Baseline (S.D)	Follow-up (S.D)	t (d.f.)	p, single-sample t-test, one-tailed
All tasks	3.4 (1.8)	2.4 (1.7)	-5.86 (102)	<.001
Modified tasks	4.0 (1.9)	2.6 (2.1)	-6.13 (90)	<.001
Unmodified tasks	3.1 (1.8)	2.4 (1.8)	-3.88 (101)	<.001

Note: The appropriate test for these differences would be a paired-sample t-test, but since we can't link baseline to follow-up data, a single-sample t-test is the best we can do. The single-sample t-test does not take into account the sampling error at baseline.

TABLE 3

Reduction in any discomfort and high discomfort

	Baseline	Follow-up	t (d.f.)	p, single-sample t-test, one-tailed
Any discomfort				
All tasks	96.2%	87.4%	-2.70 (102)	.004
Modified tasks	93.9%	74.7%	-4.19 (90)	<.001
Unmodified tasks	94.7%	82.4%	-3.25 (101)	<.001
Any high discomfort				
All tasks	52.6%	44.7%	-1.62 (102)	.054
Modified tasks	43.9%	25.3%	-4.07 (90)	<.001
Unmodified tasks	45.5%	39.2%	-1.28 (101)	.101

Note: The appropriate test for these differences would be a paired-sample t-test, but since we can't link baseline to follow-up data, a single-sample t-test is the best we can do. The single-sample t-test does not take into account the sampling error at baseline.

TABLE 4

Height and tasks associated with dumping trash: Mean discomfort level (0-7) by height

	Shorter (<=5'7") (S.D)	Taller (S.D)	t (d.f.)	p, two-sample t-test, two-tailed
Baseline				
Dumping garbage	3.7 (2.4) N = 83	3.2 (2.6) N = 19	.84 (100)	.40
Dumping barrels	3.7 (2.3) N=73	2.4 (2.4) N=19	2.22 (90)	.03
Follow-up				
Dumping garbage	3.0 (2.2) N=66	1.6 (2.1) N=14	2.17 (78)	.03
Dumping barrels	3.1 (2.6) N=54	1.4 (1.9) N=14	2.24 (66)	.02

Note: The appropriate test for these differences would be a paired-sample t-test, but since we can't link baseline to follow-up data, a single-sample t-test is the best we can do. The single-sample t-test does not take into account the sampling error at baseline.

TABLE 5

Mean back and shoulder discomfort (0-7) by height

	Shorter (<=5'7") (S.D)	Taller (S.D)	t (d.f.)	p, two-sample t-test, two-tailed
Baseline				
Dumping garbage, back discomfort	1.1 (2.2) N=83	1.3 (2.4) N=19	-.30 (100)	.76
Dumping garbage, shoulder discomfort	1.9 (2.6) N=83	1.9 (2.9) N=19	.07 (100)	.95
Dumping barrels, back discomfort	2.1 (2.5) N=73	.8 (1.6) N=19	2.13 (90)	.04
Dumping barrels, shoulder discomfort	1.5 (2.3) N=73	1.3 (2.3) N=19	.30 (90)	.77
Follow-up				
Dumping garbage, back discomfort	1.1 (2.0) N=66	.8 (1.7) N=14	.49 (78)	.62
Dumping garbage, shoulder discomfort	1.7 (2.3) N=66	1.1 (2.0) N=14	.76 (78)	.45
Dumping barrels, back discomfort	1.9 (2.6) N=54	1.1 (1.7) N=14	1.03 (66)	.31
Dumping barrels, shoulder discomfort	1.0 (2.0) N=54	.1 (.5) N=14	1.54 (66)	.13

Note: The appropriate test for these differences would be a paired-sample t-test, but since we can't link baseline to follow-up data, a single-sample t-test is the best we can do. The single-sample t-test does not take into account the sampling error at baseline.

TABLE 6

ANY HIGH DISCOMFORT AND PRIMARY LANGUAGE

	Other language % (S.D)	English % (S.D)	t (d.f.)	p, two-sample t-test, two-tailed
Baseline	67.7 (47.6) N=48	45.4 (50.1) N=77	2.35 (123)	.02
Follow-up	51.6 (50.8) N=31	46.5 (50.2) (N=58)	0.45 (87)	.65

Note: The appropriate test for these differences would be a paired-sample t-test, but since we can't link baseline to follow-up data, a single-sample t-test is the best we can do. The single-sample t-test does not take into account the sampling error at baseline.