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To: David De Angelis, Administrator
Village of Elm Grove

From: Dr. David Trechter, Director
Survey Research Center (SRC), UW-River Falls

Subject: Clarification of Elm Grove Results

First of all, I want to thank Dr. Willoughby for the time he took to read and provide feedback about the ñElm Grove Pedestrian and Bicycle Safety Survey, 2011ò report. Dr. Willoughbyôs close reading of the report raised a number of important questions.

Length of the report. Dr. Willoughby was concerned about the 48-page length of the report. Of the 48 pages, most are taken up by a compilation of the comments that Village residents made to an open-ended question. The summary of the results comprises slightly more than a dozen pages (including charts and tables).

Random sample selection. Dr. Willoughby requested additional information about the process used by the SRC to select the sample of Village residents who received an invitation to complete the survey. The SRC received a mailing list from the village that included a field showing into which quadrant a given address fell. Based on the number of adults in the Village, we estimated the number of responses we would need to generate estimates expected to be accurate to within plus or minus 5% with 95% confidence and assumed a 33 percent response rate. These calculations indicated we would need to send invitations to 1065 households in the Village. From this total, the number selected from each quadrant was proportional to the total number of addresses for the village (24% from quadrant A, 20% from quadrant B, etc.). We used a random number generator to select the individual addresses in the sample from each quadrant.

Gender distribution in sample. The SRC, like Dr. Willoughby, would have preferred to have a gender distribution in the sample that was closer to the actual gender distribution in the Village. The cover letter accompanying the survey included the following statement, ñTo insure a random sample, if there is more than one adult (over age 18) in your household, we ask that the adult who most recently celebrated his/her birthday complete the survey.ò Had this direction been followed, we should have observed a gender distribution in the sample close to the 48% male/52% female distribution that the Census tells us is in Elm Grove, rather than 38% male/62% female we got. However, for practical purposes, the imbalance is not as grave a problem as it might appear. The SRC looked at the responses for the 14 variables for which there was a statistically significant difference between the responses from males and females, calculated the mean response from the un-weighted data and recalculated it using the weights

representative of the population of the village (48% male and 52% female). As the following table indicates, reweighting the means has little practical impact.

Question	Male	Female	Wtd Mean (48/52)	UnWtd Mean (38/62)	Diff	Implication
2aWalk	2.49	2.3	2.39	2.37	0.02	slightly more adult walkers per household
5aPark	2.76	2.37	2.56	2.54	0.02	slightly less likely to increase walk/jog/bike to park if safety were improved
5bDown	2.77	2.35	2.55	2.53	0.02	slightly less likely to increase walk/jog/bike to downtown if safety were improved
5cSchool	3.34	2.97	3.15	3.15	0.00	no difference in walk/jog/bike to school if safety were improved
5dNeighb	3.07	2.65	2.85	2.82	0.03	slightly less likely to increase walk/jog/bike to neighboring communities if safety were improved
6aWalk	3.01	3.54	3.29	3.3	(0.01)	slightly safer walking in Elm Grove vs neighboring communities
6bBike	3.4	3.94	3.68	3.69	(0.01)	slightly safer biking in Elm Grove vs neighboring communities
6cJog	3.46	3.91	3.69	3.7	(0.01)	slightly safer jogging in Elm Grove vs neighboring communities
7c1-Way	3.33	3.55	3.44	3.44	0.00	no change in importance of 1-way streets
7dOffRd	2.14	1.68	1.90	1.86	0.04	slightly less importance of off-road pathway
7hSight	2.14	1.86	1.99	1.97	0.02	slightly less importance of improved sightlines
7iSurface	2.36	2.06	2.20	2.17	0.03	slightly less importance of improved sidewalk/trail surface
10TrailAdj	2.3	2.05	2.17	2.16	0.01	slight increase toward adjacent trail decreasing home value
11TrailNet	1.8	1.59	1.69	1.68	0.01	slight increase toward trail system in village having neutral effect on home value

Age distribution in sample. Dr. Willoughby notes that there were relatively few respondents under 35 years of age and a disproportionate number over 65. Again, the SRC would much prefer to have gotten more responses from Village residents 35 and younger. It is, unfortunately, generally the case that this age group tends to respond to surveys in relatively low numbers. It is not that the SRC under-sampled these age groups, these age cohorts just didn't complete and return the surveys that were sent to them. As was true with the gender imbalance, the practical importance of the under-representation from the younger age groups probably isn't great. For instance, age was statistically significant at the .00 level for the question asking about the number of adults in the household who walk at least once a week. This level of significance means that there is less than a one percent chance that the observed differences between younger and older respondents is just due to the nature of the sample. In other words, if we repeated this survey 100 times we wouldn't expect to see the results from younger and older respondents to be statistically equal. The following table shows the weighted (responses are weighted by the

proportion of the population in each age category) and the unweighted responses for this question. Because older Village residents were more likely to say no one in their household walks at least once a week and were over-represented in the sample, the weighted proportion in this category falls. However, we would still say that roughly one-fifth of the Elm Grove population does not walk once a week. The differences are generally relatively small.

How many of those living in your home who are **18 or older** walk in Elm Grove at least once a week?

	Weighted	Unweighted
0	17.1%	20.0%
1	29.7%	31.0%
2	44.0%	41.5%
3+	9.1%	7.5%

The pattern shown in the above table holds true for those instances in which age is statistically significant ï the unweighted results are close to the weighted values and tend to understate the proportion of the Elm Grove population that report exercising regularly, walking/biking/running to various destinations in the Village, and the likelihood of increasing their activity levels in response to safety improvements. In addition, weighting for age decreases the percent saying they would pay $0 in additional property taxes and increases the percentage saying theyôd pay $200+ to improve safety in the Village.

Income distribution in sample. Dr. Willoughby noted that, compared to Census data, the sample contained too few lower income households and a disproportionate number of higher income households. The income data from the Census are averages for 2005-2009, which may account for some of the 2011 income-level discrepancies. Further, as has been true above, reweighting the results to more closely reflect the income distribution in the village (increasing the weights on lower income and reducing them for higher income households), results in little change. For instance, there is a strong statistically significant difference in how safe walking is in Elm Grove relative to nearby communities and incomes. If we reweight the results based on the Censusô income distribution we get the following:

How would you rate the safety (e.g. from cars) of walking in Elm Grove compared to other nearby communities?

	Weighted	Unweighted
Much safer	15.2%	14.8%
Somewhat safer	19.4%	19.1%
The same	23.6%	23.0%
Somewhat less safe	12.0%	13.6%
Much less safe	17.9%	21.4%
Donôt know	10.9%	8.2%

While there is some shifting around in the distribution of responses, the shifts are relatively minor and basically move probability out of the less safe responses. The reweighting doesnôt change the overall interpretation of the results.

Similarly, it was noted that there were statistically significant associations between income and safety measures. The strongest such association was the option of improved sightlines at driveways and intersections (significant at .004). Reweighting the results provided the following results:

How important do you think improving sightlines at driveways/intersections (e.g. removing right of way foliage) is for the route you most commonly use to walk, bike or jog/run? (Leave blank if not applicable)

	Weighted	Unweighted
Very important	43.1%	41.7%
Important	33.9%	38.1%
Unimportant	9.3%	8.9%
Very unimportant	6.2%	7.3%
Don't know	6.4%	3.9%

The reweighting resulted in a bit higher proportion of respondents saying this is "very important" or that they "don't know" and a slight reduction in those saying improved sightlines are merely "important" or who feel such improvements are "very unimportant."

Dr. Willoughby also raised the important question about the equity of increases in taxation to improve safety, given the smaller-than-expected number of lower-income households in the sample. The following table shows that reweighting to increase the "voice" of lower-income households increases the proportion of Village households who would not be willing to pay any more in taxes to fund safety projects (by 5.5%) but there still appears to be a majority of Village residents who would be willing to pay at least $50 in additional property taxes to improve pedestrian/bike safety.

If private, state, or federal money cannot be obtained to improve pedestrian/bike safety, by what dollar amount would you be willing to see your annual property tax bill increased to improve pedestrian/bike safety?

	Wtd	UnWtd
$0	42.3%	36.8%
$50	26.6%	28.1%
$100	19.0%	20.8%
$150	3.4%	3.7%
$200+	8.6%	10.5%

Note: 512 respondents answered the question about willingness to pay more in property taxes to improve safety in the Village. However for this table, there were only 381 who answered both this question and provided information on their household income.

In sum, there is little evidence to suggest that differences between the income distribution in the sample and in the Census data would alter the interpretation of the results from the survey.

Non-participants. Usually, the SRC tests the response patterns of those who completed a reminder mailing (non-respondents to the first mailing) to those who responded to the first

invitation to take the survey. This gives us some indication if non-response bias is likely to be a problem. In the Elm Grove case, because the response rate to the first mailing was so large (45%), the data aligned well with most demographic indicators, and in order to be fiscally conservative, we did not do a second mailing. Given the foregoing analysis, there doesnôt seem to be any strong evidence that non-respondents would favor the status quo. In most instances, the under-represented groups (younger, less affluent) seem to be slightly more active walkers/bikers/runners and equally interested in safety measures than those who are over-represented in the sample.

Childrenôs Exercise levels. Dr. Willoughby raised a concern that the SRC suggested that childless couples skewed the results of the question asking ñHow many of those living in your home who are younger than 18 participate in the following activities in Elm Grove at least once a week?ò There was a problem with this question. When a person answers ñ0ò it is unclear if they mean there are children in their home and none engage in the activity or if they mean there are no children in their home. We should have included a ñnot applicableò option or asked specifically how many children lived in the household.

The first question in the survey asked how many people (including the respondent) currently live in the home, with answer options from 1 to 6+. The second question asked how many adults engage in walking, biking or running at least once a week. The SRC had expected to be able to determine the number of children in the home based on the pattern of responses to these two questions but we were unable to do so. In some instances the respondents selected the top option (6+ and 3+) to these two questions so we couldnôt determine the exact number of people referenced. In others, the number of adults and children identified in questions 2 and 3 did not match the number in question 1. Finally, if zero was selected for both adults and children in questions 2 and 3 there was no way of knowing how many of each constituted the total number in the household.

The SRC accepts responsibility for this questionnaire design flaw. The SRC looked at the proportion of households in Elm Grove without children as reported by the Census and noted that it aligned reasonably well with the proportion of households that said there were no children who either walked or biked on a weekly basis. We, therefore, indicated that it looks as if most children in the village engage in walking and biking at least once a week.

West vs East. Finally, Dr. Willoughby expressed concern about the ability of the survey to discern geographic differences in response patterns given that the survey was designed to assess overall Village opinions about safety issues. It is true that the confidence intervals for the individual quadrants within Elm Grove are larger than they are for the Village as a whole. For example, the SRC estimates that the confidence interval for the village as a whole is plus or minus 4% and for quadrant A it is plus or minus 5.5 percent. However, since the samples within each quadrant were randomly selected, there is no reason that differences canôt be discerned. The SRC did test for statistical significance based on the quadrant in which the respondent lived for all the variables in the survey. We noted only those instances for which there were significant differences in response patterns.