

Impact of Field Period Length in the Estimates of Sexual Victimization in a Web based Survey of College Females

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Abstract

When administering a survey on a sensitive topic, such as sexual victimization, one needs to be concerned about the potential for bias due to the length of the survey's field period. If persons who have a greater interest in the survey topic (e.g., because they are victims) are more likely to respond quickly then a short field period may lead to upwardly biased results. However, a long field period may negatively impact estimates when there is a fixed starting point for the reference year (e.g., beginning of the academic year) because the reference period for early responders is shorter than the reference period for late responders. The Campus Climate Survey Validation Study (CCSVS) Pilot Test, sponsored by the Bureau of Justice Statistics and the Office of Violence Against Women, was a web-based survey administered at nine colleges interested in measuring the prevalence and incidence of sexual victimization among undergraduate students during the 2014-15 academic year. The survey, administered at the end of the Spring 2015 semester, was in the field for approximately 60 days at each school even though almost all schools achieved their targeted sample size within 28 days. In this paper we present a comparison of the estimates for key sexual victimization outcomes based on three different field periods. We found that early and late responders did not differ for the key outcomes of interest. We discuss how the use of incentives and other strategies in the CCSVS may have contributed to mitigating potential bias in terms of how long it took victims and non-victims to decide to participate in the survey. Furthermore, we look at how response rates varied by the different field period lengths and the impact that shorter field periods would have had on design effects after adjusting for nonresponse.

Key Words: Early vs. Late Responders, web surveys, college students, sexual assault, incentives, nonresponse bias

1. Introduction

How long a survey is in the field is a critical component of the survey design. The survey field period impacts response rates, survey cost, and, when there is a fixed reference period, the length of time the respondent is from the reference period. Web surveys, where e-mail addresses are known for sample members in advance, are often able to collect a lot of data relatively quickly. For example, in the Campus Climate Survey and Validation Study (CCSVS), a study of college students, the target sample size in 8 of 9 participating schools was able to be obtained in 12 days (see Figure 1).

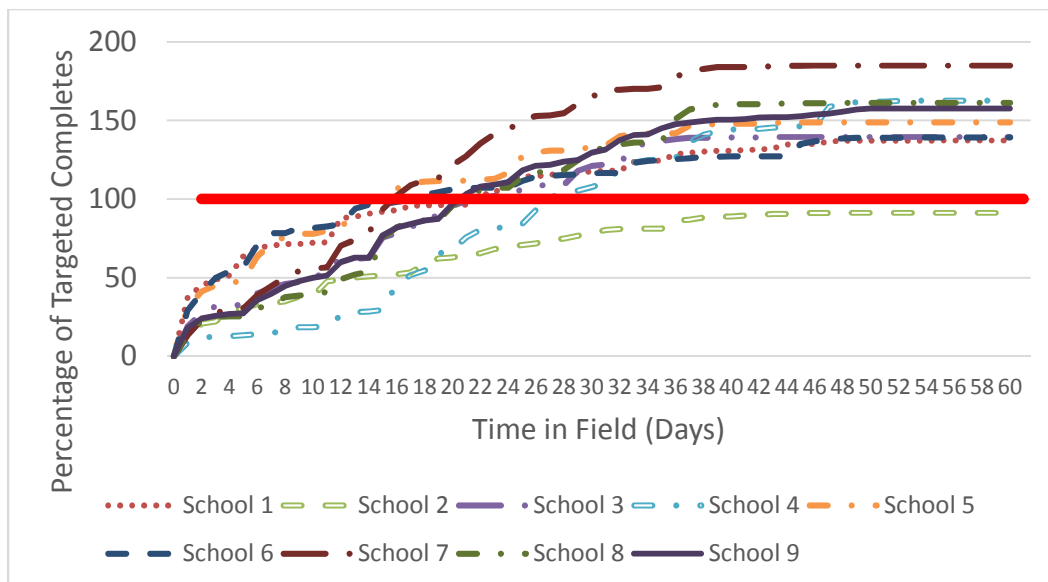


Figure 1. Percentage of desired interviews completed by school and day of data collection, CCSVS, 2015

Because data is collected so quickly, the field period for web surveys are often relatively short compared to other modes (e.g., telephone, in-person). If early responders – i.e., those that respond to a survey immediately – and late responders – i.e., those that require several prompts before responding – endorse the outcome of interest at the same rate then a short field period will not introduce response bias. However, for sensitive surveys (e.g., where the outcome is sexual victimization) it is not known if early and late responders will report the outcome of interest at similar rates.

1.1 Past Studies Comparing Early vs. Late Responders

The current literature is mixed on how early and late responders differ. Several studies have found that sample members that have a greater saliency to the outcome of interest are more likely to respond early. Studies on teacher satisfaction (Green, 1991), patient satisfaction (Gadkari, et. al., 2011; Yessis and Rathert, 2006; Paganini-Hill, et al, 1993), and task based questions (Sauro, 2015) found that the more salient population – satisfied teachers and patients, persons that prefer certain tasks – were more likely to respond early. Other studies on job satisfaction (Borg, et. al, 2003) and grant application usage (Welch and Barlau, 2014) found no differences between early and late responders. However, none of these studies assessed a sensitive topic.

1.2 Study Goals

Our study assesses whether early and late responders differ for a sensitive topic – sexual assault – and, if there are differences, what factors may mitigate those differences. **Table 1** details the key strengths and weaknesses in having a short and long data collection period. Given the trade-offs between two field period lengths, without knowledge about how each design impacts bias and precision, the optimal field period length is not known to study designers.

Table 1: Strengths and Weaknesses of Short and Long Data Collection Periods

	Short Data Collection Period	Long data collection period
Strengths	<ul style="list-style-type: none"> • For fixed reference period (e.g., academic year) maximizes respondent time within • May still achieve target sample size 	<ul style="list-style-type: none"> • Minimizes potential bias due to field period length • Maximizes respondent sample size • Increases precision for overall estimate, but also for identifying subgroup differences
Weaknesses	<ul style="list-style-type: none"> • May bias estimates if early respondents different from late respondents • Potentially lower precision due to fewer respondents 	<ul style="list-style-type: none"> • Respondents may have different reference periods or reference period lengths potentially leading to bias • Higher costs

Recent studies on measuring sexual assault among college students have used varying field period lengths. For example, the CCSVS (Krebs, et al. 2016) used a 60 day field period to maximize response from its 9 participating schools. However, the AAU study (Cantor et. al., 2015) utilized a three week field period in order to maximize the amount of time a student had in the reference period¹.

In this paper, we attempt to assess (1) how the estimates for the CCSVS would have changed and (2) what are possible reasons under the CCSVS design for the estimates to change (or not).

2. Methods

2.1 The CCSVS

The CCSVS was sponsored by the U.S. Bureau of Justice Statistics (BJS) and the Office of Violence against Women (OVW) and conducted by RTI International during the spring of 2015. The CCSVS include 9 post-secondary institutions of varying sizes, institutional control (public, private not-for-profit), and geographic location. The goal of the CCSVS

¹ For both the CCSVS and the AAU study the reference period used was the current academic school year (i.e., the 2014-15 academic school year).

was to measure the rate of sexual assault during the current academic year and student's perceptions of the climate surrounding sexual assault on campus. The CCSVS survey was a 15 minute survey administered through the web and accessible on a computer, tablet or mobile device.

Prior to data collection each school provided a roster of currently enrolled undergraduate students along with their e-mail address and the following student characteristics:

- Sex
- Hispanicity
- On-campus living status
- SAT/ACT score
- Age
- Race
- Transfer status
- GPA
- Year of study

At each school a stratified (by sex) simple random sample of students was selected. Each sampled student was e-mailed an initial invitation as well as several follow-up e-mails during the field period. Each request notified the students that upon completion of the survey they would receive a code for a \$25 electronic gift card² from a choice of nine retailers or restaurants. After data collection, post-survey adjustments for non-response and coverage were conducted using the auxiliary information provided by the school. Across the 9 schools, approximately 23,000 responses were collected.

The field period for the CCSVS at each school was approximately 60 days prior to the last day of class at the school.

2.2 Assessing Field Period Length

To assess field period lengths two alternative field period lengths were considered: (1) 21 days and (2) 28 days. For each alternative field period, students whose date of interview was after the designated field period length were treated as nonrespondents. The post-survey non-response and coverage adjustments were conducted.

Prior to comparing the different field period lengths we reviewed:

- The unweighted cumulative victimization rate by school and day of data collection
- The average victimization rate by school and week of data collection

For each of the field periods, we looked at the following:

- Response rate by school
- Weighted estimates for key outcomes and corresponding standard errors by school
- Design effects due to unequal weighting by school
- Relative standard errors for sexual assault by school

Finally, the impact of the incentive on how early and late responders differed. The AAU survey used a small, nominal incentive in some of their schools. Therefore, we compared

² In four of the schools an incentive experiment was conducted (Krebs et. al., 2015). In two schools the experiment compared a \$10 to a \$25 incentive and in the other two schools the experiment compared a \$25 to \$40 incentive.

how respondents who received a \$10 incentive differed over time compared to those that received the \$25 incentive.

For each type of analysis the victimization rate among females was considered. This was done because the CCSVS was not powered to produce stable victimization rates for males.

3. Results

3.1 Initial results

Figure 2 presents the unweighted victimization rate of sexual assault by school and day of data collection. From this figure, two findings can be gleaned. First, the initial rate of victimization rates over time do not follow a uniform pattern. Some schools have initially higher victimization rates and then decrease before stabilizing while other schools start increase over the initial few days before stabilizing. Second, regardless of the initial direction of the victimization rate and the final magnitude of the victimization rate the rate stabilizes after about 28 days.

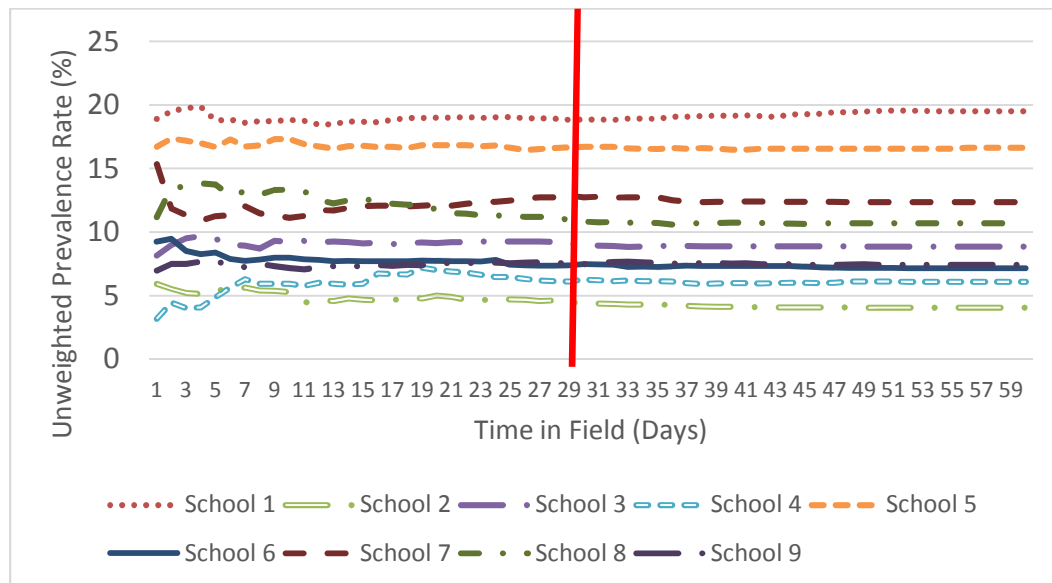


Figure 2. Unweighted victimization rate by school and time in field, CCSVS

Figure 3 presents the average victimization rate in each week of data collection. From this figure it can be seen that, for each school, the proportion of respondents in a week that report a victimization is relatively constant across time – at least there is no consistent increase or decrease in the proportion of female students reporting a victimization each week.

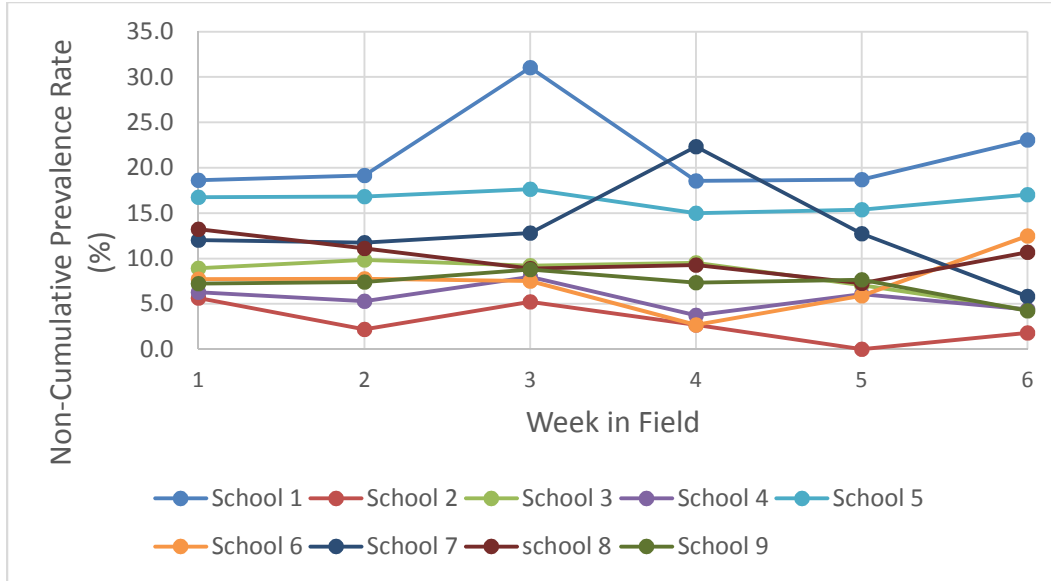


Figure 3. Proportion of students reporting a victimization by week of data collection and school, CCSVS

3.2 Comparison of Field Period Length

Figure 4 presents the response rates among females that would be realized under each field period length by school. Across all schools the response rate increased from 30.6% at 21 days to 34.2% at 28 days (an 11.8% increase compared to 21 days) and 40.9% after 60 days (a 33.7% and 20.0% increase compared to 21 days and 28 days, respectively). At the individual school level similar results are found. That is the change in the response rate is greater when going from 28 to 60 days compared to 21 to 28 days.

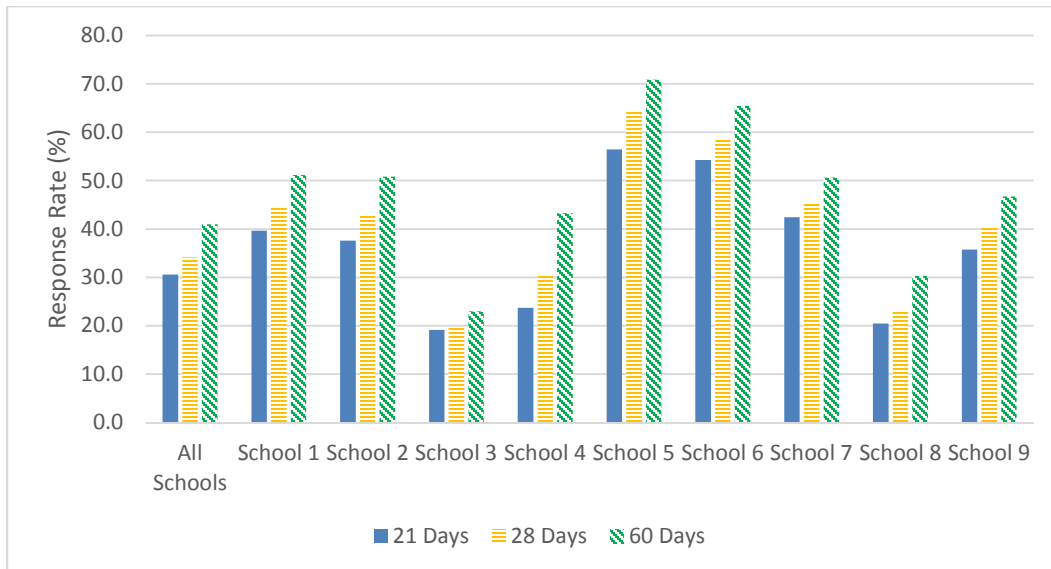


Figure 4. Response rates among females by school and field period length

Figure 5 presents the weighted rate of sexual assault by field period length and school. In aggregate there is a non-significant decrease in the sexual assault rate when the field period is 21 days, 28 days, or 60 days. However, this finding is not consistent at the school level.

For example, School 1 has a higher victimization rate a U-shaped rate over time with the highest rate occurring at 60 days and the smallest rate under the 28 day field period length. Alternatively, School 7 has the highest under a 28 day field period length. Similar findings were found for other outcomes such as rape and sexual harassment.

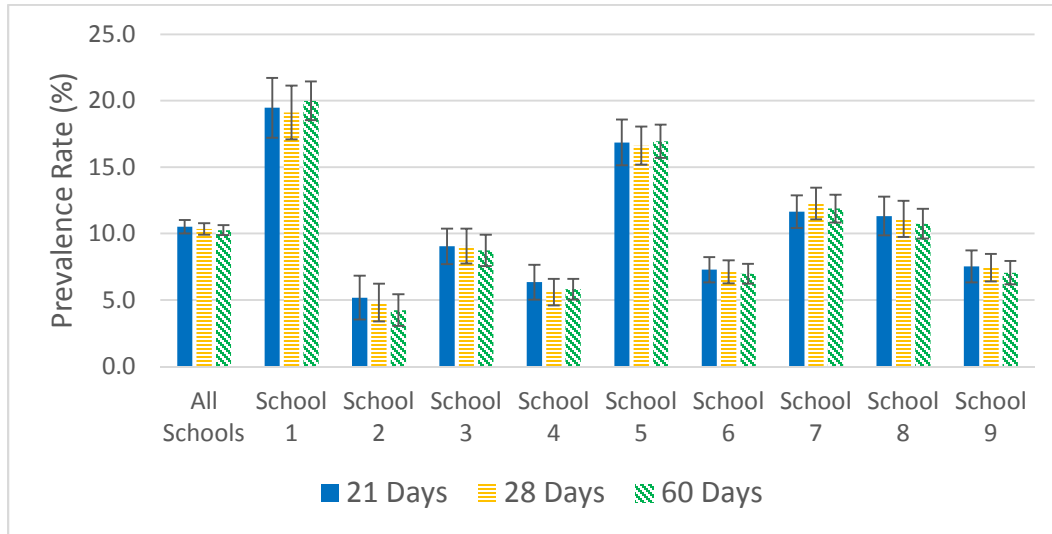


Figure 5. Prevalence rate of sexual assault by field period length and school, CCSVS

Table 2 provides the design effects due to unequal weighting caused by nonresponse by school. As the table shows, for all schools except one³, the design effects decrease as the field period length increases. This is an indication that the when the data collection period is shorter the distribution of respondents looks less like the population than after a longer data collection period.

Table 2: Design Effects Due to Unequal Weighting by School and Field Period Length

School	21 Days	28 Days	60 Days
1	1.464	1.384	1.112
2	1.082	1.076	1.190
3	1.010	1.009	1.006
4	1.261	1.206	1.142
5	1.145	1.113	1.091
6	1.206	1.179	1.141
7	1.067	1.061	1.048
8	1.074	1.074	1.062
9	1.152	1.134	1.118

Figure 6 presents the relative standard errors for each field period length by school. As expected the relative standard errors to improve (i.e., get smaller) as the field period length increases. However, in some schools the precision gains are negligible.

³ The one school, School 2, had the lowest response rate (see Figure 2). Because of the smaller number of respondents the nonresponse and calibration models could not support as many covariates. This led to lower design effects than compared to the 60 day model which included more covariates in the nonresponse and calibration models.

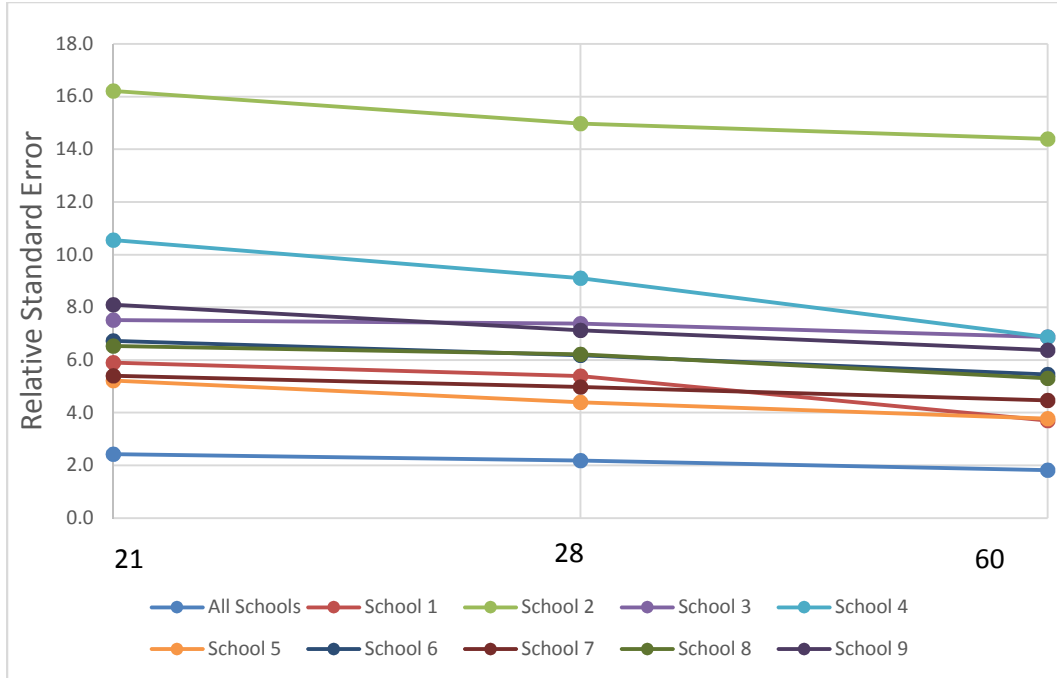


Figure 6. Relative standard errors by school and field period length

3.3 Impact of the Incentive

Given the lack of differences found between early and late responders, we assessed whether the use of a \$25 incentive was mitigating a difference between early and late responders. In reviewing the two schools where students were randomized to either a \$10 or \$25 incentive. Figure 7 shows percentage of targeted interviews (which was equal for each group) by incentive level. The \$25 incentive successful (1) brought in respondents more quickly and (2) achieved the targeted respondent goal.

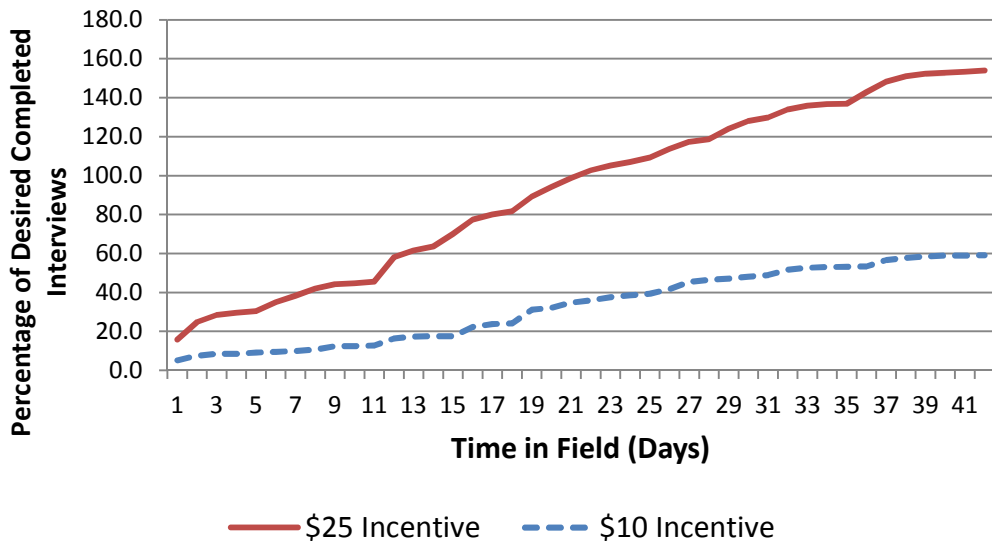


Figure 7. Percentage of targeted interview respondents by incentive level

Figure 8 presents the cumulative victimization rates over time by incentive level. As can be seen, the \$10 incentive, which had fewer respondents, had a much higher victimization rate during the first 3 weeks of data collection compared to the \$25 incentive. At the completion of data collection, the \$10 incentive had a 16% higher victimization rate than the \$25 incentive.

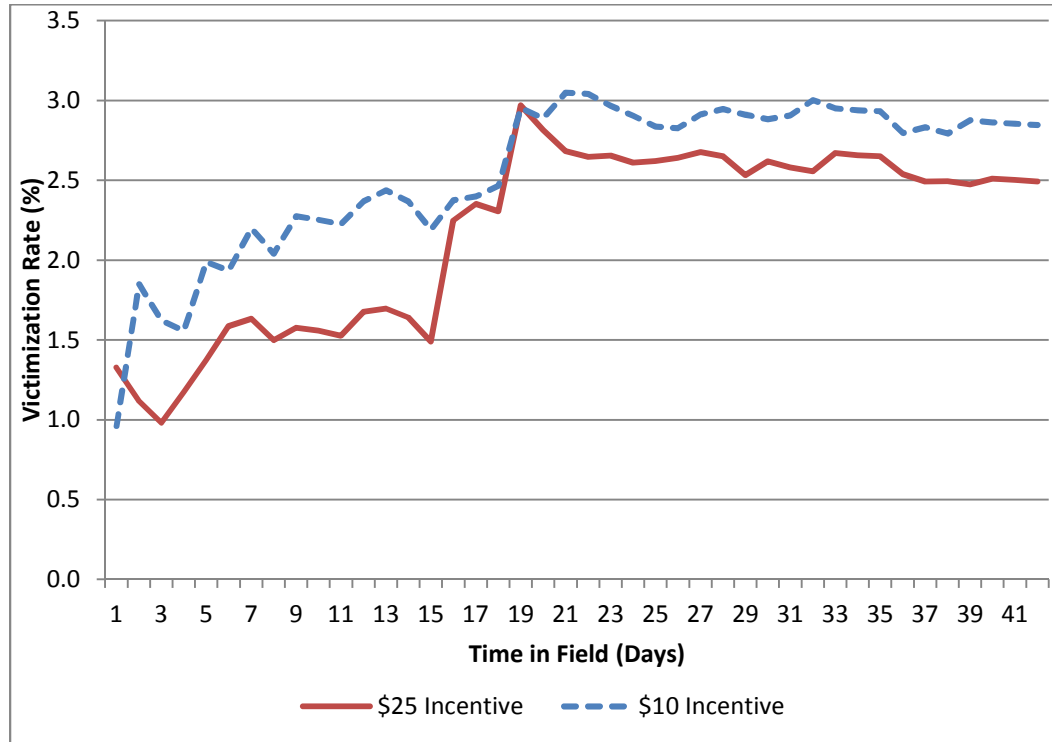


Figure 8. Victimization rates by incentive level and day of data collection

4. Discussion

Overall, in the CCSVS, early responders did not differ from late responders for the key outcomes of interest. These findings are different than the findings of similar studies such as the AAU study which found that early responders were more likely to report a victimization. In reviewing the reasons for the difference in findings between these otherwise similar studies, the use of a \$25 incentive appeared to have the greatest impact in mitigating the difference between early and late responders found in other studies. Moreover, the response rates greatly increase as field period increases. Without the incentive a shorter period would have a greater potential for nonresponse bias.

5. Conclusions

Based on our findings, when a \$20 - \$30 incentive can be incorporated in the design, a shorter data collection period for a web survey on a sensitive topic can be implemented without introducing response bias. However, if no incentive or a small incentive (\$10) is all that the study can afford, a longer data collection period is probably necessary to obtain more late respondents who may be different from the early respondents under a small incentive design.

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References

- Cantor, D., Fisher, B., Chibnall, S., Townsend, R., Lee, H., Bruce, C., Thomas, G. (2015). Report on the AAU Campus Climate Survey on Sexual Assault and Sexual Misconduct.
https://www.aau.edu/uploadedFiles/AAU_Publications/AAU_Reports/Sexual_Assault_Campus_Survey/AAU_Campus_Climate_Survey_12_14_15.pdf
- Gadkari, A., McHorney, C., Pedan, A., Gowda, N. (2011). Non-Response Bias in a Survey Assessing Patients' Medication and Health Beliefs. *Value in Health* Vol. 14 Issue 3.
- Green, K.E. (1991). Reluctant Respondents: Differences between Early, Late, and Nonresponders to a Mail Survey. *The Journal of Experimental Education* Vol. 59, No. 3 pp. 268 – 276.
- Krebs, C. P., Lindquist, C. H., Berzofsky, M. E., Shook-Sa, B. E., Peterson, K. C., Planty, M., et al. (2016). Campus Climate Validation Survey: Final technical report. *Bureau of Justice Statistics Research and Development Series, NCJ 249545*. Washington, DC: Bureau of Justice Statistics, Department of Justice.
<http://www.bjs.gov/content/pub/pdf/ccsvsfr.pdf>
- Paganini-Hill, A., Hsu, G., Chao, A. and Ross, R.K (1993). Comparison of Early and Late Respondents to a Postal Health Survey Questionnaire. *Epidemiology* Vol. 4 Issue 4 pp. 375 – 379.
- Sauro, J. (2015). Does Response Timing Matter in Online Research?
<http://www.measuringu.com/blog/early-late-responders.php>
- Welch, W.W. and Barlau, A.N (2014). Addressing Survey Nonresponse Issues: Implications for ATE Principal Investigators, Evaluators, and Researchers
<http://www.colorado.edu/ibs/decaproject/pubs/Survey%20nonresponse%20issues%20Implications%20for%20ATE%20PIs%20researchers%20%20evaluators.pdf>
- Yessis, J. and Rathert, C. (2006). Initial versus Prompted Responders to Patient Satisfaction Surveys: Implication for Interpretation of Patient Feedback. *Journal of Applied Management and Entrepreneurship* Vol 11 No 4.