

Assessing Potential Bias in Respondent-Driven Incident Based Data from a Web Survey of College Students

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Abstract

Incident-level data collection is a useful approach when measuring events that can occur multiple times within a survey's reference period. Incident-based data allow survey researchers to analyze not just characteristics of persons but also characteristics of incidents (e.g. to assess the proportion of victimizations reported to authorities). However, asking respondents to complete detailed incident reports for all incidents experienced within the reference period may be too burdensome for persons who experienced several incidents. Therefore, survey practitioners often cap the number of incident reports required for each respondent. If reported incidents differ from those not covered in the survey instrument, then bias potentially exists because limiting the number of incidents seemingly excluded incidents with certain characteristics. The Campus Climate Survey Validation Study (CCSVS), sponsored by the Bureau of Justice Statistics and the Office of Violence Against Women, was a web based survey administered at nine colleges that collected prevalence and incident-based information on unwanted sexual contact. The CCSVS capped the number of incident reports at three and allowed respondents to determine the order in which incident reports were completed. To assess the potential for bias, we determine whether respondents systematically ordered the reported incidents. Bias could be introduced if the incidents that do not have a completed incident report are fundamentally different (e.g., occur later in the year or are less severe) than those that were reported. We consider incident ordering based on the chronological order and severity of incidents. In addition, we assess whether respondents who were unsure of the month in which one of their incidents occurred reported those incidents in a systematic way. Our analysis found that respondents do appear to systematically order their incidents both in terms of chronological order and severity. We quantify the potential impact of this biased ordering on key victimization estimates.

Key Words: Order effect, respondent fatigue, campus climate surveys, incident-level survey

1. Background

Incident-level surveys – a survey which obtains detailed characteristics about each specific incident reported by a respondent – are a useful approach when wanting to better understand and describe an outcome that may occur multiple times within a reference period. Through incident-level data researchers are able to analyze not just the characteristics of persons but also characteristics of incidents. However, asking respondents to provide detailed information about each incident experienced within a reference period may be too burdensome (i.e., survey administration time will be too long) for persons who experience multiple incidents. To balance the desire for incident-level

information and burden on the respondent, survey designers may cap the number of incidents for which detailed incident-level characteristics are obtained. Determining an optimal cap point is important to minimize bias that may occur if too few incidents are asked about or too many. If information for too few incidents are asked about and those for which data are not obtained are systematically different than those which the survey collects information (e.g., less serious events are omitted) then the estimates may be biased. However, if too many incidents are asked about, respondents may begin to fatigue and skip incidents leading to increased item nonresponse. In this paper, we look at the impact of capping the number of incidents for which information is collected on in a survey of college students on sexual assault during the current academic year.

1.1 The Survey

The Campus Climate Survey and Validation Survey (CCSVS), sponsored by the Bureau of Justice Statistics and the Office of Violence Against Women and conducted by RTI International, was a web-based survey of 23,000 undergraduate college students conducted at nine post-secondary institutions (Krebs, et al., 2016). The goal of the CCSVS was to measure prevalence and incident rate of sexual assault among males and females during the current academic year (2014-15) at each of the participating schools and student's opinions of the climate at the school regarding sexual assault.

As a web-based survey of college students, the survey length was of paramount importance in order to maximize participation. The CCSVS' average targeted administration length was 15 minutes. In order to keep the average time at 15 minutes, the number of incidents for which detailed information was asked about was capped at 3.

1.2 Study Motivation

By capping the number incidents a respondent provides detailed information about, survey designers need to determine how to ask students to choose which incidents are described in detail. Survey designers have several options for how to ask students to order their incidents for providing detailed information. Some of these options include: (1) chronological order, (2) reverse chronological order, (3) most severe to least severe, and (4) respondent choice. Each of these approaches have advantages and disadvantages. For the CCSVS, it was determined that allowing the respondent to determine their own ordering strategy would increase the student's engagement in the survey and reduce recall error. However, under this approach it is not clear if students would introduce their own systematic bias by all ordering the incidents in a similar manner.

The impact of this systematic bias depends on the number of students that indicate having more incidents than the chosen cap. **Figure 1** presents the number of incidents during the academic year reported by a student. As can be seen, 94% of students reported 3 or fewer incidents. Therefore, 6% of respondents did not provide detailed information on all of their incidents.

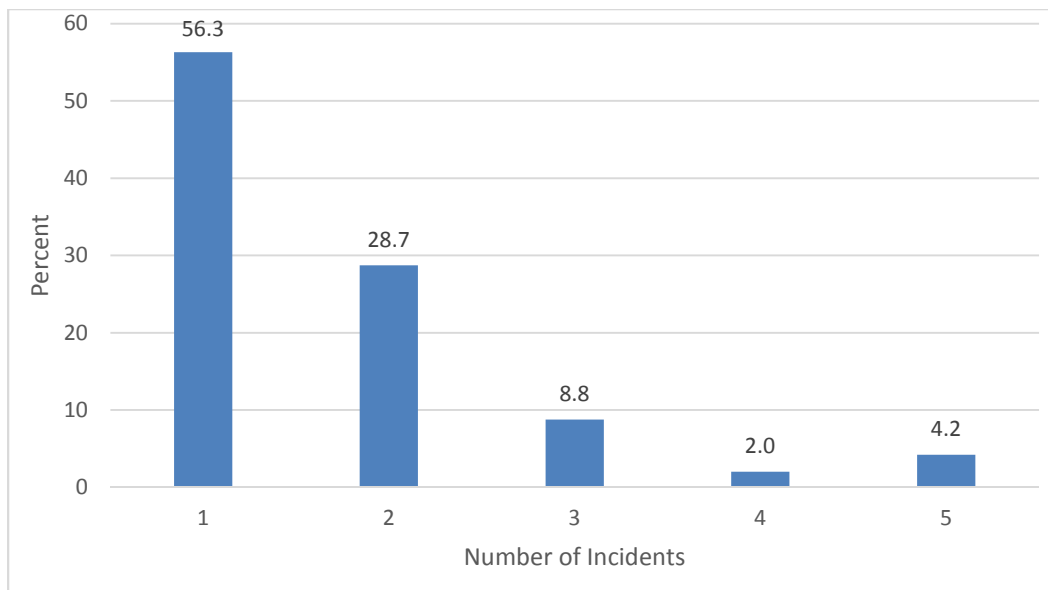


Figure 1. Number of incidents of sexual assault experienced by undergraduate students, 2014-2015 academic year. Source: Campus Climate Survey Validation Study (CCSVS), 2015

In the CCSVS, when a student reported having at least one incident during the academic year, they initially asked to enter the month the incident occurred. This was done to provide a reference for the student during the follow-up questions to ensure they understood which incident was being asked about¹. **Figure 2** presents the distribution of the month of reported incidents. If the student reported four or more incidents they were informed that they would be asked to complete three incident follow-up reports. Furthermore, when more than one incident was reported by a student, the ordering strategy they chose for entering the month of the incident was used to determine the order the detailed incident information was provided. Therefore, students with four or more incidents could self-select which incidents they described.

¹ If the student was unsure of the month of the incident they were allowed to indicate this and still provide detailed information for the incident.

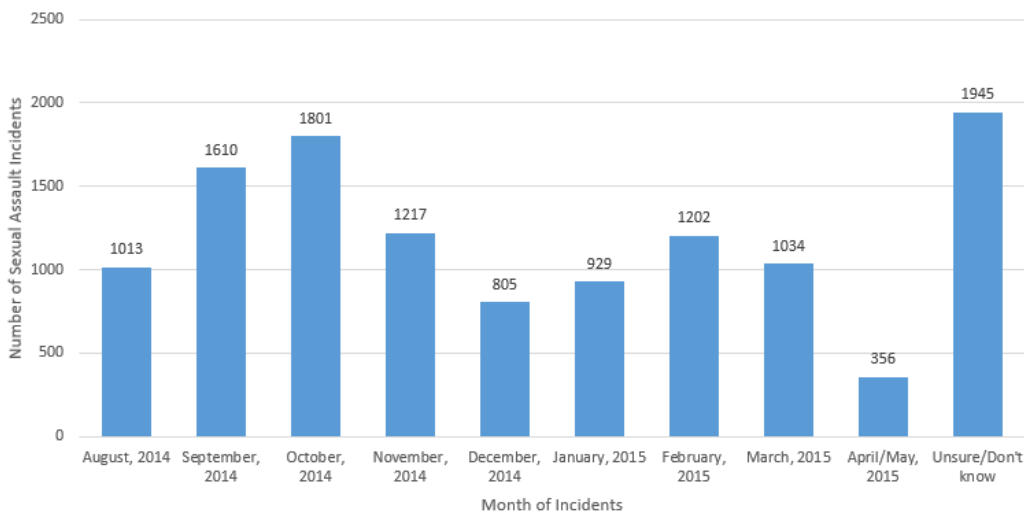


Figure 2. Number of sexual assault incidents experienced by undergraduate students by month, 2014-2015 academic year. Source: Campus Climate Survey Validation Study (CCSVS), 2015

Due to the uncontrolled ordering strategy, bias could be introduced if the incidents that do not have a completed incident-level report are fundamentally different than those that were reported. For example, if incidents are systematically ordered chronologically then estimates may be biased to earlier in the year skewing the distribution of victimization over time. Alternatively, if incidents were systematically ordered by severity of the assault then estimates may be upwardly biased on the number of severe sexual assault incidents.

Incident-order does not only impact which incidents are detailed in the incident reports, but, potentially, the amount of information provided about each incident. As a respondent moves through the incident reports he/she may be subject to an increased likelihood of respondent fatigue. The impact of this fatigue is an increase the amount of item nonresponse in the later incident follow-up loops. The 44% of respondents who report more than one incident may be impacted by this respondent fatigue.

1.2 Research Questions

Given the uncertainty of how the decision to allow respondents to choose their own ordering strategy may have caused an unintended ordering effect in the form of selection bias or respondent fatigue, this paper attempts to answer the following research questions:

1. Is there potential bias due to uncontrolled ordering strategy?
2. Which, if any, factor contributes the most to incident ordering strategy?
3. Is there potential bias due to increased item nonresponse across the incident-level reports?

2. Methods

The analyses to assess ordering effect were limited to the 676 sexual assault victims (38% of all victims) who reported experiencing 2 or 3 incidents. This was done because (1) the 56% of victims who reported a single victimization did not have to decide how to order their responses, so there was no potential for an ordering effect, and (2) for those with 4 or more incidents the incident-level information was not collected making the impact of the ordering effect not fully knowable.

The ordering strategies employed by respondents was examined at four levels:

- Assessment of the chronological order in which incidents were reported
- Assessment of when a student indicates he/she is “unsure” of the month in which the incident occurred.
- Assessment of the order in which incidents were reported based on the severity of the sexual assault incident
- Assessment of the cross between chronological ordering and ordering by severity

2.1 Assessment of chronological order effect

Responses to item on the month of the incident were used to classify respondents into categories for assessment of chronological ordering strategy. This analysis included only to those who provided the month the incident occurred for all incidents reported. The set of incidents for a respondent were classified as (1) earliest to latest month, (2) latest to earliest month, (3) same month, and (4) no pattern.

2.2. Assessment of “unsure” month of incident

Similarly, the month of the incident item was also used to examine ordering strategy of respondents who indicated “unsure” of the month of occurrence. This analysis subset to the 143 victims who were unsure of at least one of the months in which an incident occurred. To understand when a respondent indicated an “unsure” month, the set of incidents were classified as (1) unsure first, (2) unsure last, (3) all unsure, (4) no pattern.

2.3 Assessment of severity ordering

To classify respondents into categories for assessment of ordering by severity of the incident, responses to the initial detailed incident item was used. This item classified the type of unwanted contact for which the student was a victim (see **Exhibit 1**). The unwanted sexual contact levels were classified into one of three broad categories, ordered from most severe to least severe:

- Rape
- Sexual battery (excluding rape)
- Unsure

Given the individually classification of each incident, the set of incidents were classified as (1) most severe to least, (2) least severe to most, (3) no order, (4) all unsure, (5) all rape, (6) all sexual battery, (7) all unsure.

Exhibit 1. Type of unwanted sexual contact survey item

ILF2. During [IF P2=1, FILL “the incident”; IF P2=2 OR MORE, FILL “incident #1”], which occurred in [FILL THE MONTH AND YEAR REPORTED IN #ILF1, e.g., “February, 2014.”], which of the following types of unwanted sexual contact happened? Please indicate whether each type of unwanted sexual contact happened during this incident.

	Yes	No	Unsure
a. Forced touching of a sexual nature (forced kissing, touching of private parts, grabbing, fondling, rubbing up against you in a sexual way, even if it is over your clothes)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Oral sex (someone's mouth or tongue making contact with your genitals or your mouth or tongue making contact with someone else's genitals)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Anal sex (someone putting their penis in your anus)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. [RESPONSE WILL NOT DISPLAY IF D3=MALE] Sexual intercourse someone putting their penis in your vagina)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Sexual penetration with a finger or object (someone putting their finger or an object like a bottle or a candle in your [IF D3=FEMALE TRANSGENDER, SOMETHING ELSE, OR BLANK, FILL: "vagina or anus"; IF D3=MALE, FILL: "anus"])	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2.4 Assessment of cross between chronological order and severity

In order to further assess which characteristic of an incident may be driving the ordering strategy, an assessment of the interaction between chronological ordering and severity ordering was conducted amongst victims who provided the month of incident and severity of incident for all reported sexual assaults. Given the chronological ordering pattern and the severity ordering pattern, the set of incidents were classified as (1) earliest to latest, all the same severity; (2) earliest to latest, most severe to least; (3) earliest to latest, least severe to most; (4) all the same month, all the same severity; (5) other.

2.5 Assessment of respondent fatigue

To assess if data quality decreases with each incident report, average level of item nonresponse across the 81 items in the incident follow-up loop was examined for each loop.

3. Results

3.1 Assessing chronological order

Figure 3 presents the findings of the assessment of how respondents ordered their incidents chronologically. The majority of victims ordered their incidents chronologically (86%) with it being most common for victims to order incidents earliest in the year to latest in the year (81%). Chronological ordering could not be determined for the 13% of victims who experienced all of their incidents of unwanted sexual contact with the same month of the academic year. Only 1.3% of incidents were known to have been not listed in any chronological order.

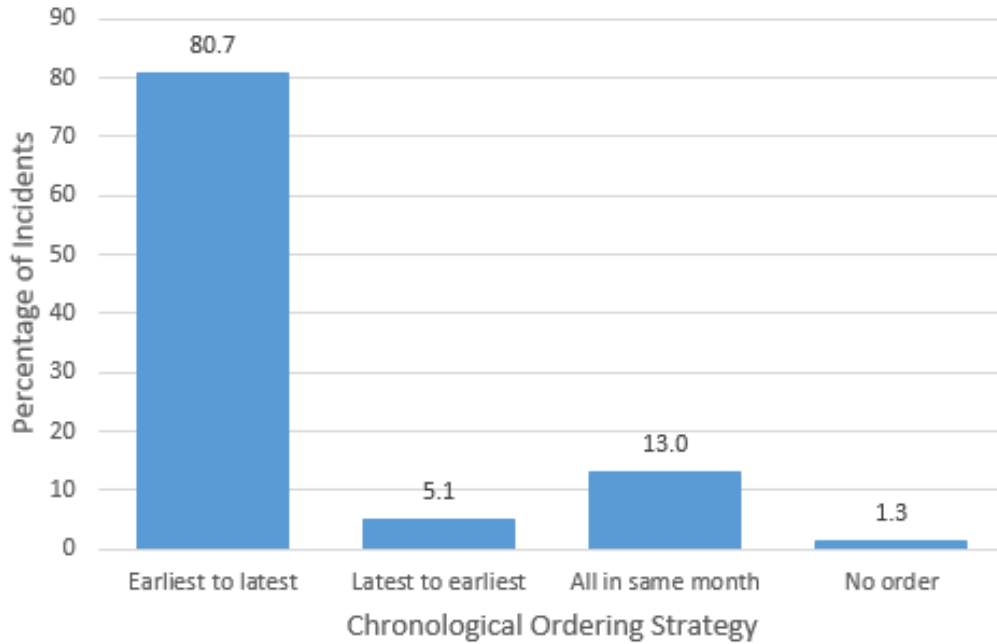


Figure 3. Order in which incidents are listed by undergraduate students with two or three unwanted sexual contact incidents, 2014–2015 academic year Source: Campus Climate Survey Validation Study (CCSVS), 2015

3.2 Assessing ordering of “unsure” month

Figure 4 presents the results of the ordering strategy used to identify incidents that occurred in an unknown month. The majority of students who had at least one incident for which they were unsure of the month in which the sexual assault occurred, indicated they were unsure of month for all reported incidents (50%). It was slightly more common for victims to order the incidents they were unsure of the month of occurrence last with 27% ordering unsure last versus approximately 20% ordering unsure first.

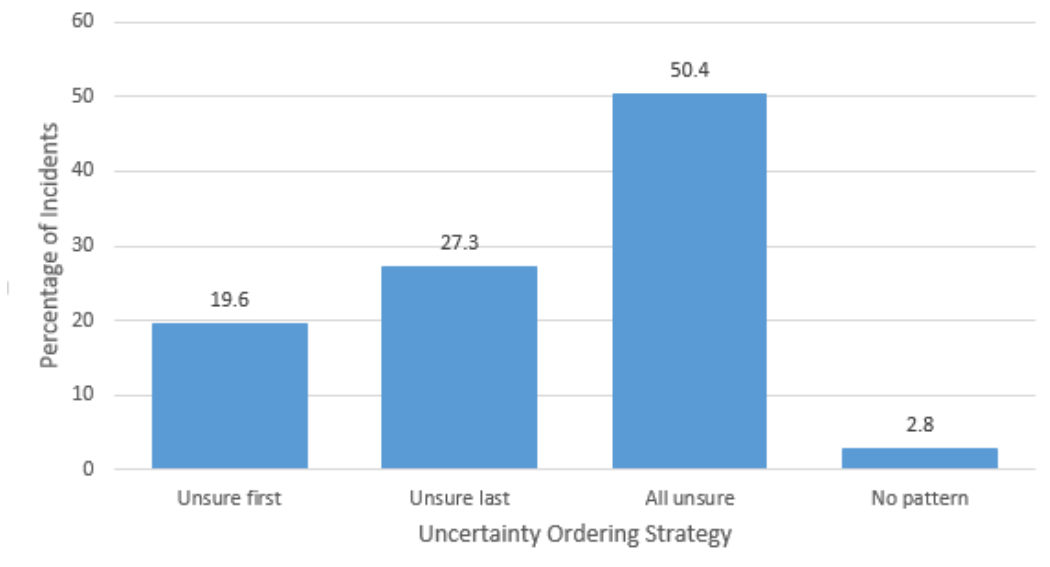


Figure 4. Order in which incidents are listed by undergraduate students with two or three unwanted sexual contact incidents, by when “unsure” was listed for month, 2014–2015 academic year. Source: Campus Climate Survey Validation Study (CCSVS), 2015

3.3 Assessing the ordering based on severity

Figure 5 presents the results of how respondents ordered their incidents based on the severity of the incident. The majority of victims reported the same type of unwanted sexual contact for each incident of sexual assault provided (66%) and therefore it is not possible to determine if ordered by severity of assault. Excluding incidents that were all of the same severity level, it was most common for victims to order from most severe to least severe (19.3%). Among students with incidents that varied in severity category, this amounts to 59% of victims. Only 11% of the victims who had incidents that varied in severity had no pattern in their ordering strategy.

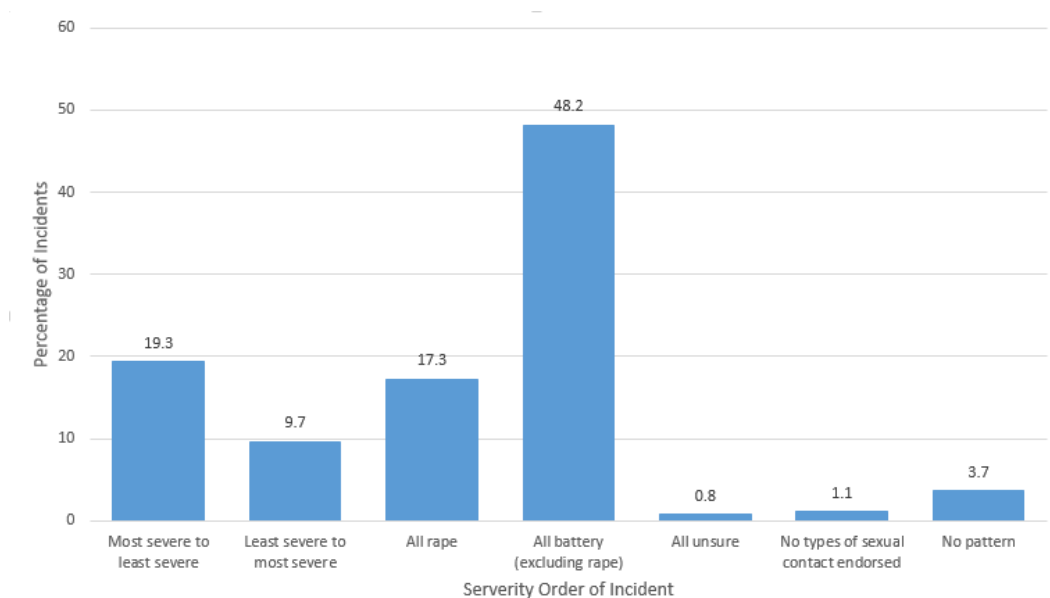


Figure 5. Order in which incidents are listed by undergraduate students with two or three unwanted sexual contact incidents, by severity, 2014–2015 academic year. Source: Campus Climate Survey Validation Study (CCSVS), 2015

3.4 Assessing the relationship between chronological order and severity order

Figure 6 presents how the chronological ordering strategy employed by respondents is related to the severity ordering strategy employed. Chronological order seemed to play a larger role in a victim’s ordering strategy than severity. The majority of students included in the analysis ordered incidents by chronological ordering with the most common ordering strategy being earliest to latest and all same severity level (55%). Of the top 4 most common ordering strategies, 3 of them were listed in chronological order.

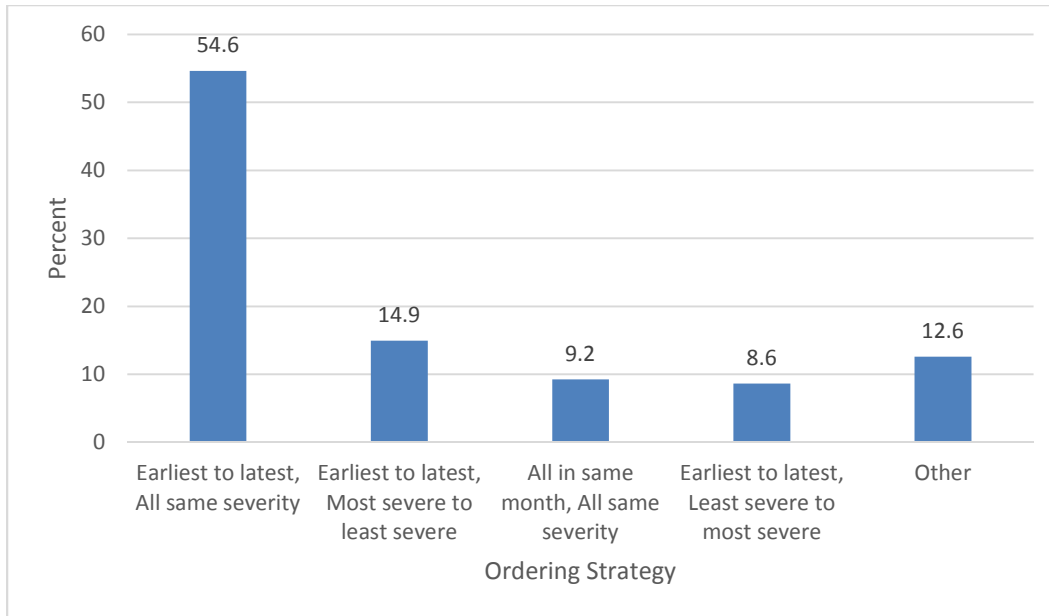


Figure 6. Order in which incidents are listed by undergraduate students with two or three unwanted sexual contact incidents by chronological order and severity, 2014–2015 academic year. Source: Campus Climate Survey Validation Study (CCSVS), 2015

3.5 Assessing respondent fatigue

Table 1 presents how respondent fatigue changed as the incident loop increased. The average item nonresponse level increased with each incident follow-up loop, with item nonresponse being more than three times as high in loop 3 when compared to loop 1 (13.4% vs. 4.3%).

Table 1. Average item nonresponse level by incident follow-up loop

Survey Section	Average Item Nonresponse Level
Incident Detail Loop 1	4.3
Incident Detail Loop 2	10.1
Incident Detail Loop 3	13.4

Source: Campus Climate Survey Validation Study (CCSVS), 2015

4. Conclusions

Our findings indicate there is a need to find balance between reducing survey length and reducing the potential for bias in incident-level data. There is a clear ordering effect when respondents self-select the ordering strategy. Victims tended to order incidents chronologically, with earliest incident being listed first, and by severity with incidents ordered from most severe to least severe. Further, when examining the cross between the two ordering strategies, chronological ordering appeared to be the main driver of the victim selected ordering strategy.

As a result, we may be systematically missing incident-level data on incidents of unwanted sexual that occurred later in the academic year or less severe incidents among students with four or more incidents. Resulting estimates may be biased in the direction of earlier in the academic year and more severe types of unwanted sexual contact.

Due to increased levels of item nonresponse, data quality decreases with each incident follow-up. As a result, we may be systematically missing incident-level data on certain types of incidents, potentially inducing bias into all incident level estimates.

Impact on potential bias among victims:

- *No impact*: The majority (56%) of victims report one incident and are therefore not impacted by the ordering strategy or item nonresponse.
- *Item nonresponse bias only*: The 44% of victims who reported two or three incidents are impacted by the increased levels of item nonresponse within each loop.
- *Ordering bias and item nonresponse bias*: The approximately 4% of victims that experience more than 3 incidents are impacted by both the item nonresponse and the clear ordering strategy.

In order to fully understand the ordering effect additional analysis is needed to determine the impact of bias on the estimates.

When designing studies that collect incident-level data in a manner that allows respondents to order their incidents, potential bias that can be induced due to purposeful ordering of incidents on the part of the respondents and/or poor data quality resulting from fatigue must be taken into consideration.

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