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Issue Brief

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Considerations for When to Send Survey Invitations to Students

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Introduction

Students who took the ACT® test in October 2015 were invited to participate in an online survey about their test-taking experience (N = 7,810). To study the relationship between timing of the invitation and survey participation, students were randomly assigned to one of six two-hour time increments, starting at two p.m. in the time zone of the survey recipient.[1] The first set of email invitations was sent three hours after students completed the ACT. Students received the invitation based on their own time zone and their randomly assigned time increment. A total of 1,813 students responded. Three research questions were investigated.

Research Question 1: Does the time of day a survey invitation is sent to students influence whether they participate in the survey?

Students who were invited to participate in the online survey were categorized into one of four outcomes based on how they engaged with the survey. The outcomes were:

- The invitation was not opened.
- The invitation message was opened, but the survey was not started.
- The invitation message was opened and the survey was started but not finished.
- The invitation message was opened and the survey was finished.

Figure 1 presents the percentage of respondents classified into one of the four survey engagement outcomes by the time of day the invitation was received.

The results show that between 43% and 64% of the students did not open the invitation, depending on the time of day it was received. Relatively fewer students opened the invitation but did not start the survey. Of note is the observed difference in survey invitation engagement for those who received the invitation at eight p.m. A larger percentage of these students, relative to students who received the invitation as other times, never opened the invitation. In addition, relative to other groups, this group had a smaller percentage of students who opened the invitation but never started the survey.

The percentage of students who started the survey but did not finish it was relatively consistent across the time of day the invitation was received,

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ranging from 4% to 6%. There was, however, variation in the percentage of students who finished the survey. Fifteen percent of the students who received the survey at eight p.m. completed it; when the invitation was received at two p.m. or four p.m., the completion rate was 20%. To determine whether these two outcomes differed statistically by the time of day the invitation was received, two logistic regression models were estimated. The first analysis estimated the relative odds of starting the survey but not finishing it as a function of the time of day the invitation was received. The second analysis investigated the relative odds of finishing the survey, also as a function of time. For both models, receiving the invitation at two p.m. was the referent.

In both analyses, only those who received the invitation at eight p.m. had a statistically significant difference in probability of starting the survey (Wald criterion = 4.715; $df = 1$; $p = .030$) and finishing it (Wald criterion = 5.279; $df = 1$; $p = .022$) relative to those in the two p.m. group. The odds of starting the survey but not finishing it for those students who received the invitation at eight p.m. was 0.68 times less likely relative to those students who received the survey at two p.m. Furthermore, the same pattern was observed with survey completion. When the invitation was sent to students at eight p.m., it was 0.79 times less likely students would finish the survey, relative to when the invitation was received at two p.m. If all invitations were to have been sent at eight p.m. instead of two p.m., this would equate to an estimated reduction in 400 responses. The limited engagement with the invitation message for those who received the invitation at eight p.m. could have impacted students both starting and completing the survey.

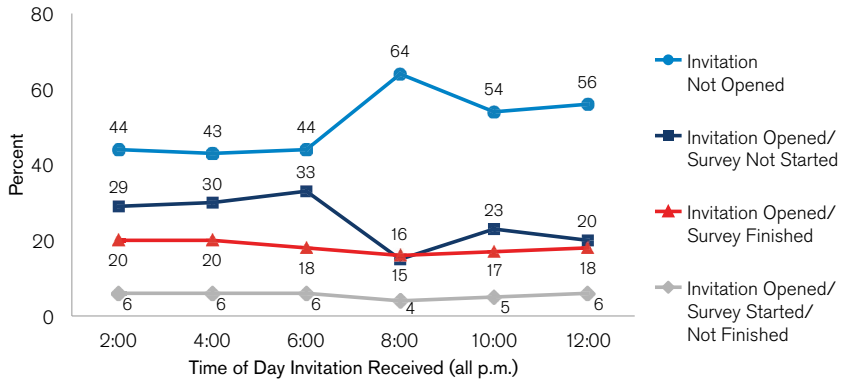
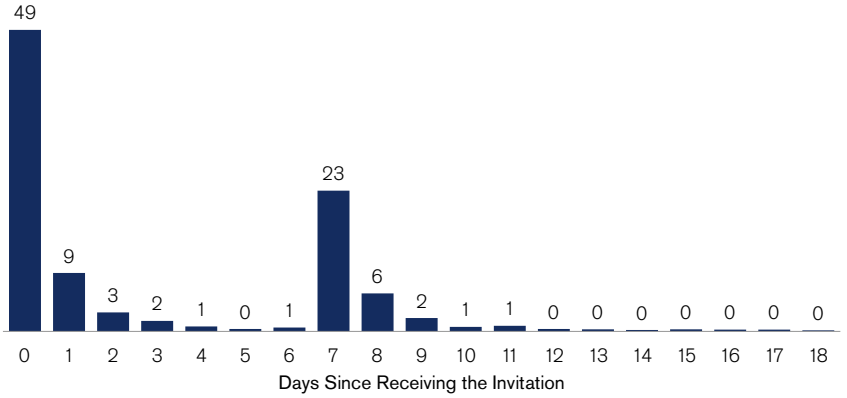


Figure 1. Survey participation outcome, by time of day invitation received



Note: Each day represents 24 hours. Those who particpated in the survey at timepoint "0" did so after 24 hours but before 48 hours of receiving the invitation. Those who participated on day "1" did so within 48 hours of receiving the invitation.

Figure 2. Percentage of students responding to the survey, by days since receiving the invitation

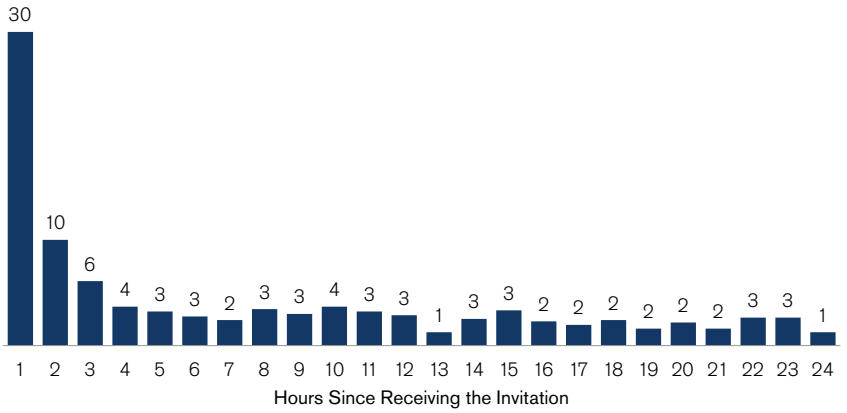
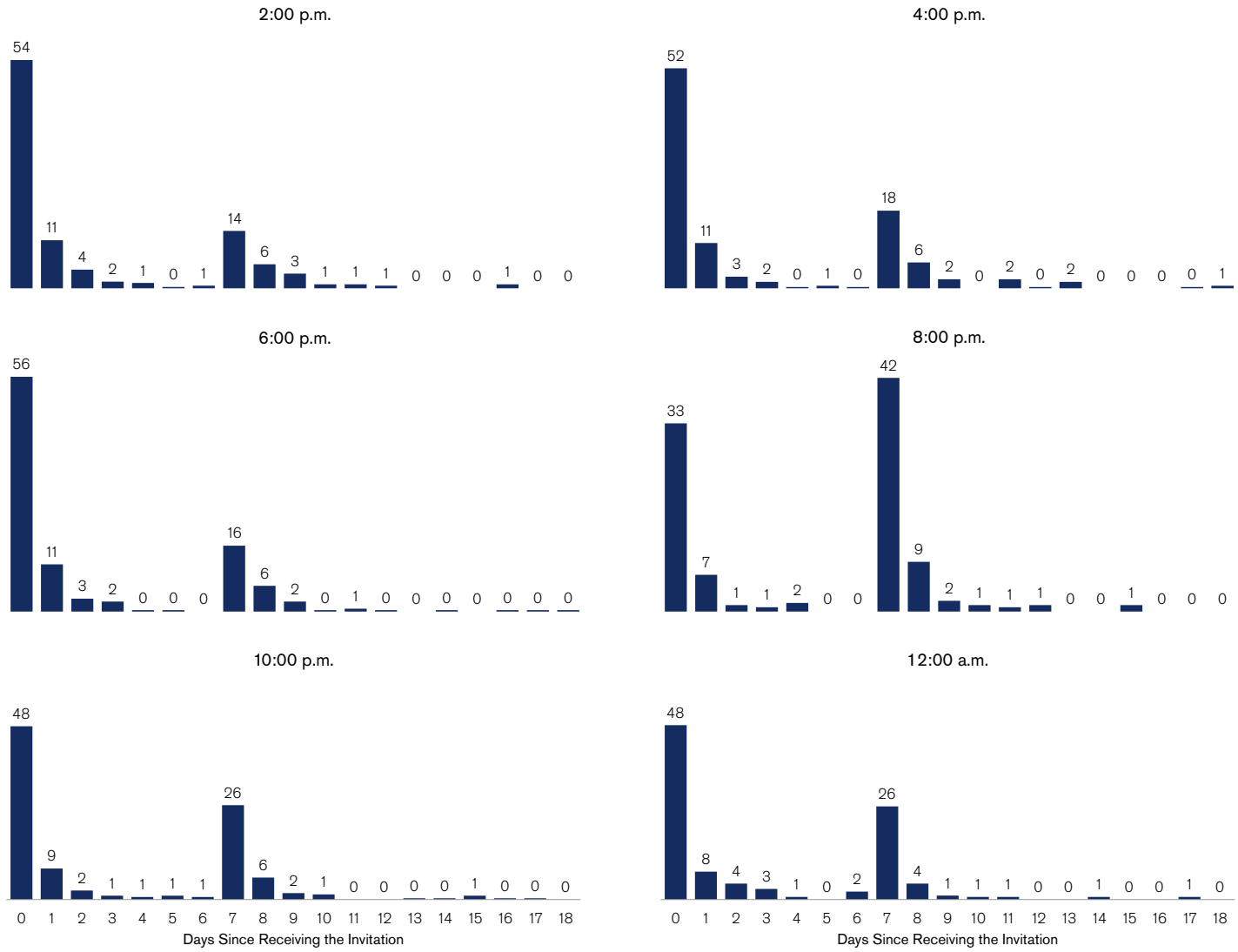


Figure 3. Percentage of students responding to the survey in the first 24 hours, by hours since receiving the invitation



Note: Each day represents 24 hours. Those who particpated in the survey at timepoint "0" did so after 24 hours but before 48 hours of receiving the invitation. Those who participated on day "1" did so within 48 hours of receiving the invitation.

Figure 4. Percentage of students responding to the survey, by days since receiving the invitation and by time of day invitation was received

Research Question 2: How soon after the invitation is sent do students participate in the survey?

While the prior research question addressed the impact of invitation timing on survey behavior, it was unknown how soon students participated in the survey after the invitation was sent. This research question, therefore, sought to determine the length of time it took students to participate in the survey, irrespective of when the invitation was received. This analysis included students who answered at least one survey question (n = 1,813) and therefore includes students who finished the survey as well as students who started the survey but did not finish it. Figure 2 presents the percentage of students responding to the survey by the number of 24 hour increments (days) since receiving the invitation.

Almost half the students who responded to the survey did so within the first 24 hours of receiving the invitation. After the first 24 hours, survey engagement decreased substantially. There was, however, a noticeable increase in responses on day seven, when the reminder message was sent.[2] On this day, approximately one-fourth of the total responses were received.

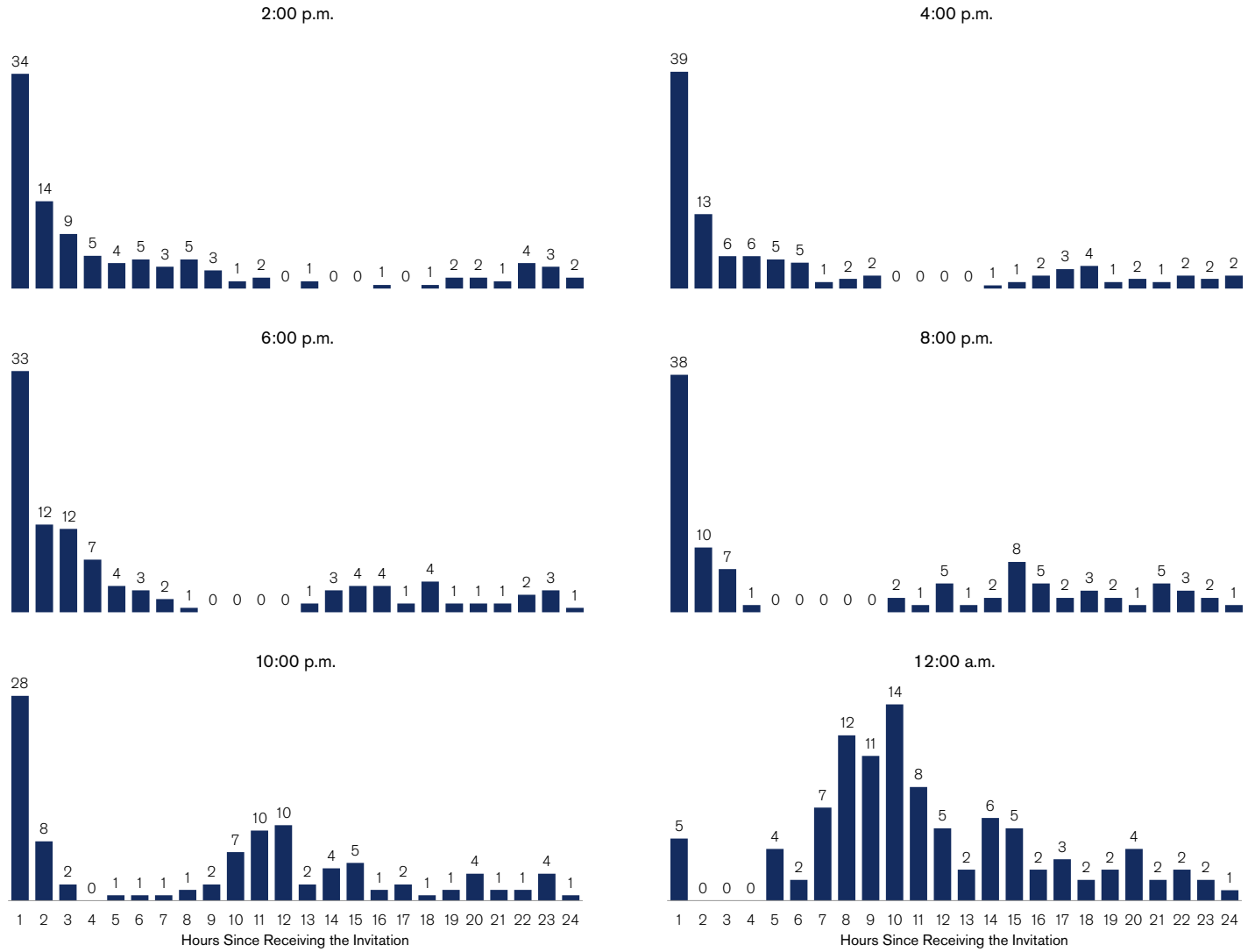


Figure 5. Percentage of students responding to the survey in the first 24 hours, by hours since receiving the invitation and by time of day invitation received

Figure 3 presents survey participation by hour for those who participated in the survey in the first 24 hours after receiving the invitation, since this is the timespan with the most survey engagement. Thirty percent of these students responded within the first hour. The percentage of students who responded after the first hour of receiving the invitation decreased across time.

Research Question 3: Is the time it takes for students to participate in the survey after the invitation is sent a function of when the survey is received?

A large percentage of students participated in the survey in the first 24 hours and, for those students, participation was high in the first hour after receiving the invitation. Still, it remained a question whether this response pattern differed based on when the invitation was received. Figure 4 presents the percentage of students responding to the survey by days since receiving the invitation and by time of day the invitation was received.

The time it took students to participate in the survey after the invitation was sent appears to be a function of when the student received the survey. The variation in survey response behavior is illustrated in three ways. First, those who received the invitation at eight p.m. were more likely to respond to the survey after the reminder message was sent than before. The opposite was observed for all other groups. Second, survey participation in the first 24 hours varied based on when the students received the survey. There were slightly fewer students who responded to the survey in the first 24 hours (48%) when the invitation was received at ten p.m.

and midnight than when the invitation was received earlier in the day (54%, 52%, and 56% for the two p.m., four p.m., and six p.m. groups, respectively). Third, variation across the invitation group in response patterns after the reminder message was received was observed. A larger percentage of students who received the invitation at ten p.m. and midnight responded after the reminder message (26%), relative to those who received the invitation earlier in the day (14%, 18%, and 16% for the two p.m., four p.m., and six p.m. groups, respectively). The use of reminder messages did increase response rates for all groups, though it did so at a greater rate when the original invitation was received later in the day. Interestingly, even those students who received the invitation as late as ten p.m. and midnight still had a relatively high response rate within the first 24 hours.

Figure 5 presents survey participation by hour for those who participated in the survey in the first 24 hours after receiving the invitation, since this was the timespan with the most survey engagement for all but the eight p.m. group.

Not surprisingly, those who received the invitation at twelve a.m. did not participate in the survey immediately. Instead, these individuals participated the next day. All other groups had the largest percentage of students respond within the first hour.

Summary

The time of day the invitation was received by students influenced response patterns. The percentage of students who engaged with the survey was larger when the invitation to participate in the survey was received earlier in the day and closer to when students had taken the ACT. Most of these students also participated in the survey within the first 24 hours of receiving the invitation and, of those, most also participated within the first hour unless the invitation was received late in the evening. For these students, a large percentage participated in the survey but did so the next day. Further, the reminder message increased student participation in the survey at a higher rate for those who received the invitation in the evening relative to those who received the invitation earlier in the day. Therefore, if sending an invitation to students in the evening is necessary, it is likely that students will still participate.

The notable exception to these trends was those students who received the invitation at eight p.m. For this group, more students responded to the survey after the reminder message than when the original invitation was provided. It is unknown why receiving the invitation at this time might change students' engagement with the survey. One possibility is that students are engaged in activities between eight and ten p.m. that they do not normally engage in outside of that period, such as completing homework, having dinner with family, or socializing with others. Additionally, it is possible that an anomalous technological event occurred when the invitation was emailed to students. Although no evidence of such an event was found, it is still possible that technological problem could explain the idiosyncratic behavior of those who received the invitation at eight p.m. Future ACT research will investigate this pattern further by asking students to respond to a survey item describing what they were doing immediately before starting the survey. Future research could also shed light as to whether technological problems were a factor.

ACT Survey Research should be mindful of timing when sending invitations to students. These results suggest ACT researchers should avoid the eight p.m. time slot if sending invitations to students the day of their test, but that later in the evening—ten p.m. or midnight—is acceptable. Readers should be aware that the results presented here are ACT-specific. The results must be interpreted in relation to the students' experience with taking the ACT and, as such, might not be generalizable outside of this context. ■

Notes

1 This is an extension of prior research conducted by the authors. Raeal Moore and Ben Earnhart, *When is the Best Time of Day to Send a Survey Invitation to Students*? (Iowa City, IA: ACT, 2016); Ben Earnhart and Raeal Moore, *Does the Timing of Invitation Emails Matter When Surveying School Counselors*? (Iowa City, IA: ACT, 2016).

2 A reminder message, sent seven days after the initial survey invitation, was received by the student at the same time of day as the original invitation.