

Predictors of Survey Completion Time Among Adolescent Respondents Using Mobile and Desktop Devices

Dream big.
Then call ICF.

Matthew Thomas, Rachel Schmidt, Olivia Saucier, and James Dayton | ICF

Contact
Matthew Thomas
matthew.thomas@icf.com



Introduction

Background

The widespread availability and popularity of mobile devices has provided an additional platform for administering web surveys. It is unclear how differences between mobile and desktop devices impact survey completion time among youth. Our implementation of a longitudinal web survey of youth provided the opportunity to assess differences in survey completion between mobile and desktop users.

Survey Design

On behalf of a large university, ICF administered a series of web surveys among approximately 2,600 students in grades 6 through 10. These surveys were formatted and optimized to be completed on both desktop and mobile devices. We conducted a paradata analysis using data from one survey wave in order to better understand completion times of students participating in the study. In particular, we investigated the effects of device type and demographic variables on completion times.

Results

Preliminary results suggest that students who access the survey on a desktop device were more likely to complete the survey in a shorter amount of time than those who completed on a mobile device. There were several key predictors of survey completion time, including, age, ethnicity, and GPA. Older students, as well as students who reported receiving mainly A's in the previous semester tended to finish the survey in less time than their peers.

Methods

Study Records

Data were available from three of the six surveys that will be administered throughout the longitudinal study. Data from the second wave of data collection were used for this analysis. Completion durations were calculated using timestamps embedded in the online survey. These timestamps recorded the time at which the survey was first accessed, as well as the time at which the survey was completed.

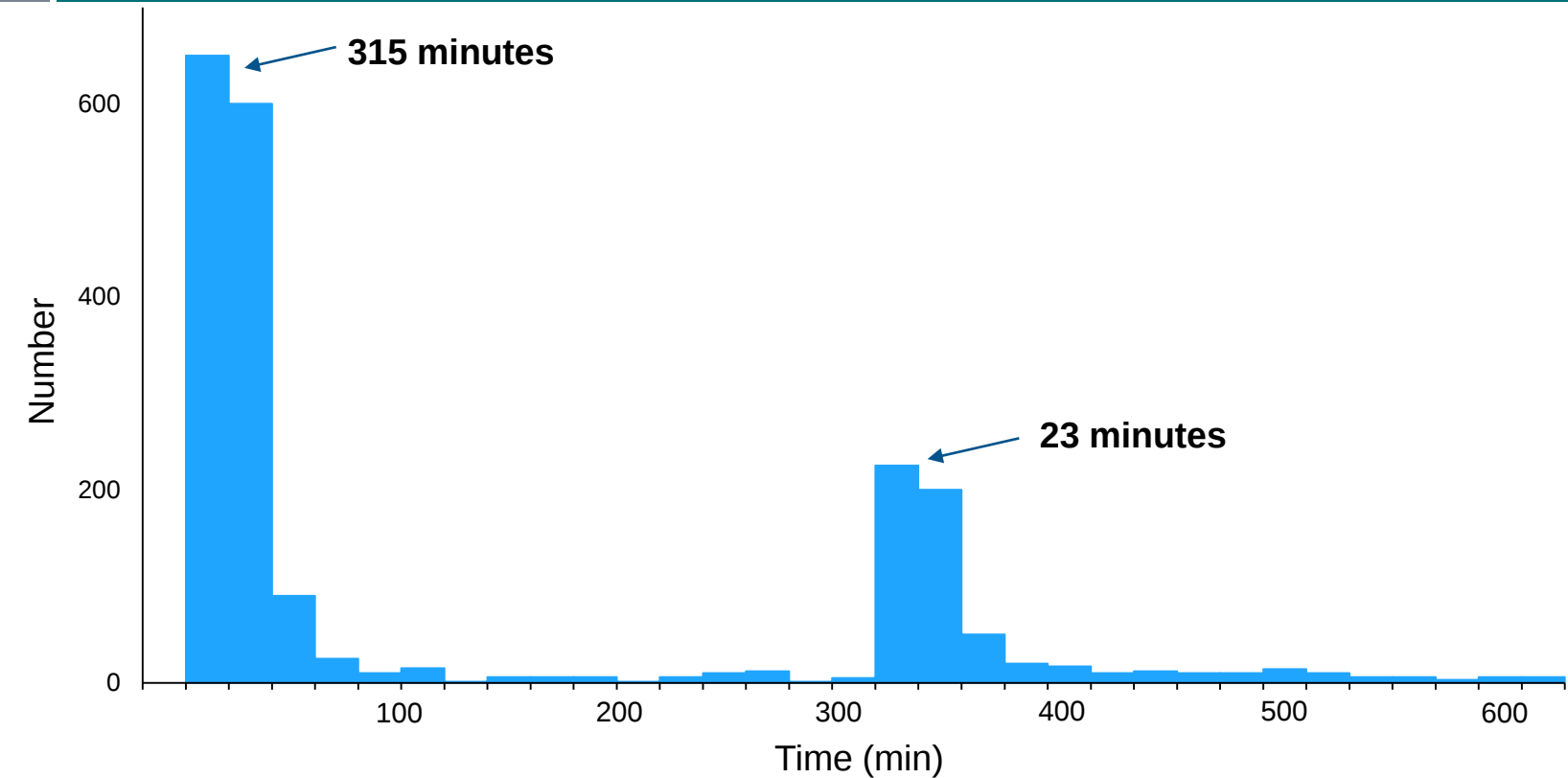
A total of 2,597 respondents completed the Wave 2 survey. We included only records with completion durations less than or equal to 600 minutes in this analysis due to a strongly skewed right distribution. Excluding records with completion durations greater than 600 minutes left 2,062 records for analysis.

Statistical Methods

The primary independent variable was device type while the primary dependent variables were two dichotomous completion duration variables with cut points at 30 min and 10 min. Demographic variables considered included age, ethnicity, GPA, economic status and lifetime tobacco use status. We also created a dichotomous variable that indicating whether a respondent answered all or only a percentage of questions presented.

Along with descriptive statistics, logistic regression analyses were performed. We modeled the log odds of completing the survey in 30 minutes or less and 10 minutes or less, as we sought to determine predictors of completion duration. For each model, we initially included the number of questions received, age, ethnicity, GPA, economic status and lifetime tobacco use status. We subsequently used SPSS's automated backwards selection process to arrive at models only including significant predictors of completion time.

Time Needed to Complete Survey



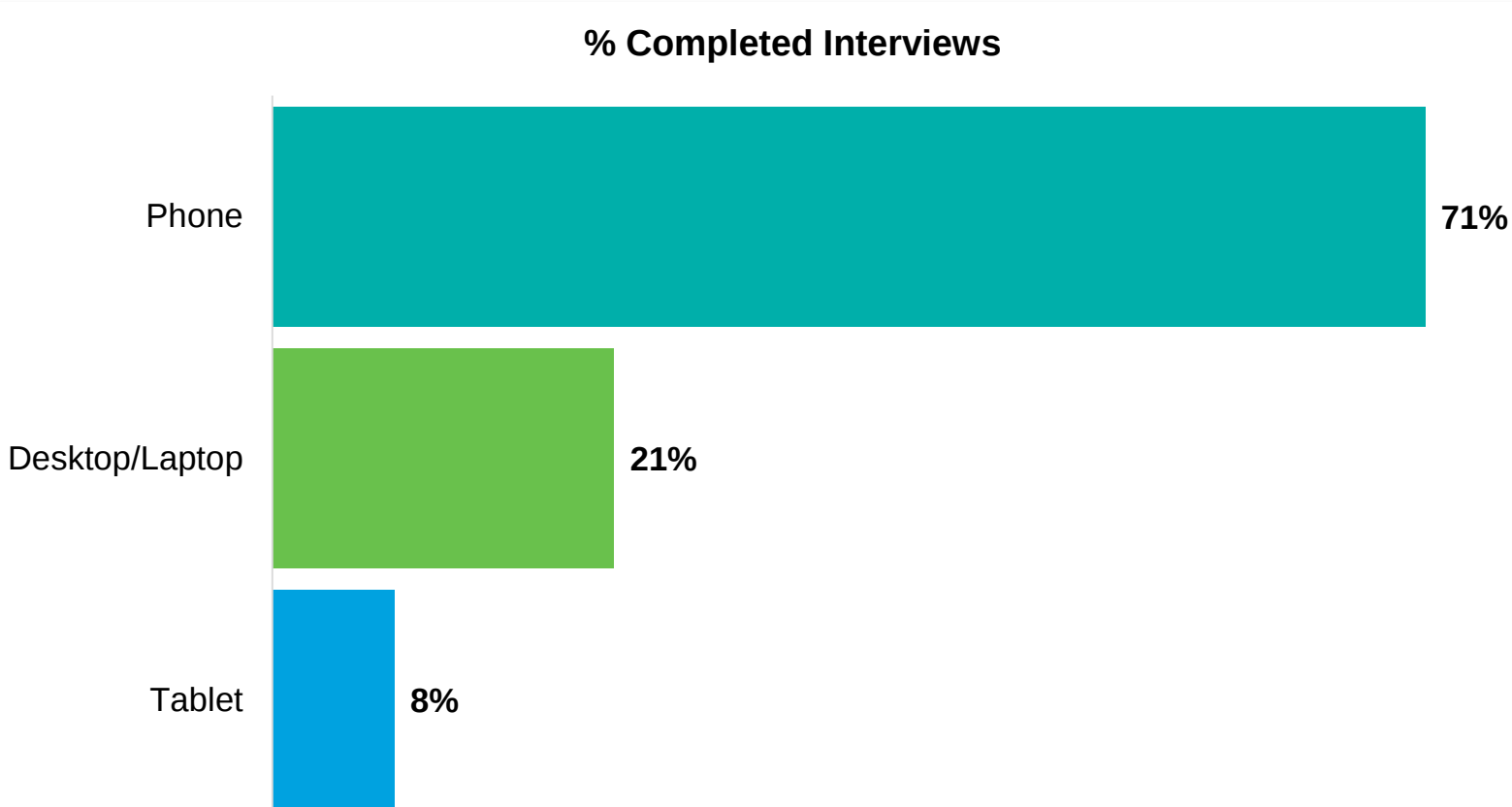
Duration of Survey Completion

The median completion time for the 2,062 respondents who completed the wave 2 in under 10 hours was 23 minutes. The distribution of completion duration was bimodal, with peaks at 14 minutes and 315 minutes. This suggests that there were a substantial portion of respondents who did not complete the survey in one sitting. 58.3% of students completed the wave 2 questionnaire in 30 minutes or less, and 7.5% of students completed the questionnaire in 10 minutes or less.

Bimodal distribution of completion duration

- A total of 2,062 completed interviews in under 10 hours
- Median completion time – 23 minutes
- Peaks at 315 minutes and 14 minutes

Survey Initiation and Completion by Device Type



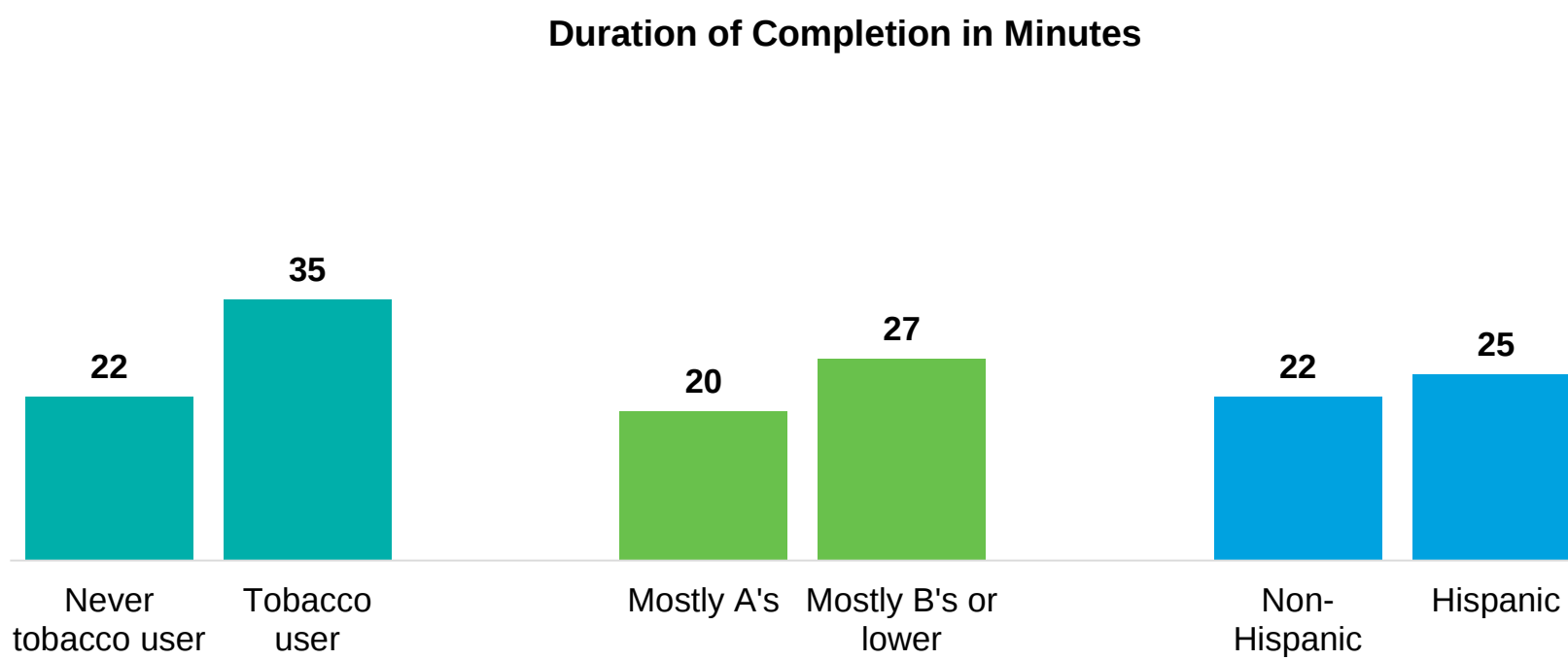
Nearly three-quarters of respondent started the survey on a phone

- Median duration among desktop/laptop and tablet users – **19 minutes**
- Median duration among phone users – **28 minutes**
- Differences were significant at the p = .05 level (Kruskal-Wallis test)

Initiation and Duration by Device

Of the 2,062 respondents who completed the survey in under 10 hours, 71% initiated by phone, 21% initiated by desktop or laptop, and 8% initiated by tablet. The median completion time was 19 minutes for both respondents who accessed the survey on computers or tablets. By contrast, the median completion time for respondents who first accessed the survey on a cell phone was 28 minutes. The distribution of survey completion duration for computer and tablet users were similar, while the distribution of survey completion duration for mobile phones user had a much larger interquartile range (not shown).

Duration of Survey Completion Among Sub-Groups



Duration of survey completion varies among sub-groups

- Survey completion was significantly faster among:
 - Never tobacco users vs. tobacco users
 - Students who mostly get A's vs. students with lower grades
 - Non-Hispanic students vs Hispanic students
- All differences were significant (Mann-Whitney-Wilcoxon test)

Duration Among Sub-Groups

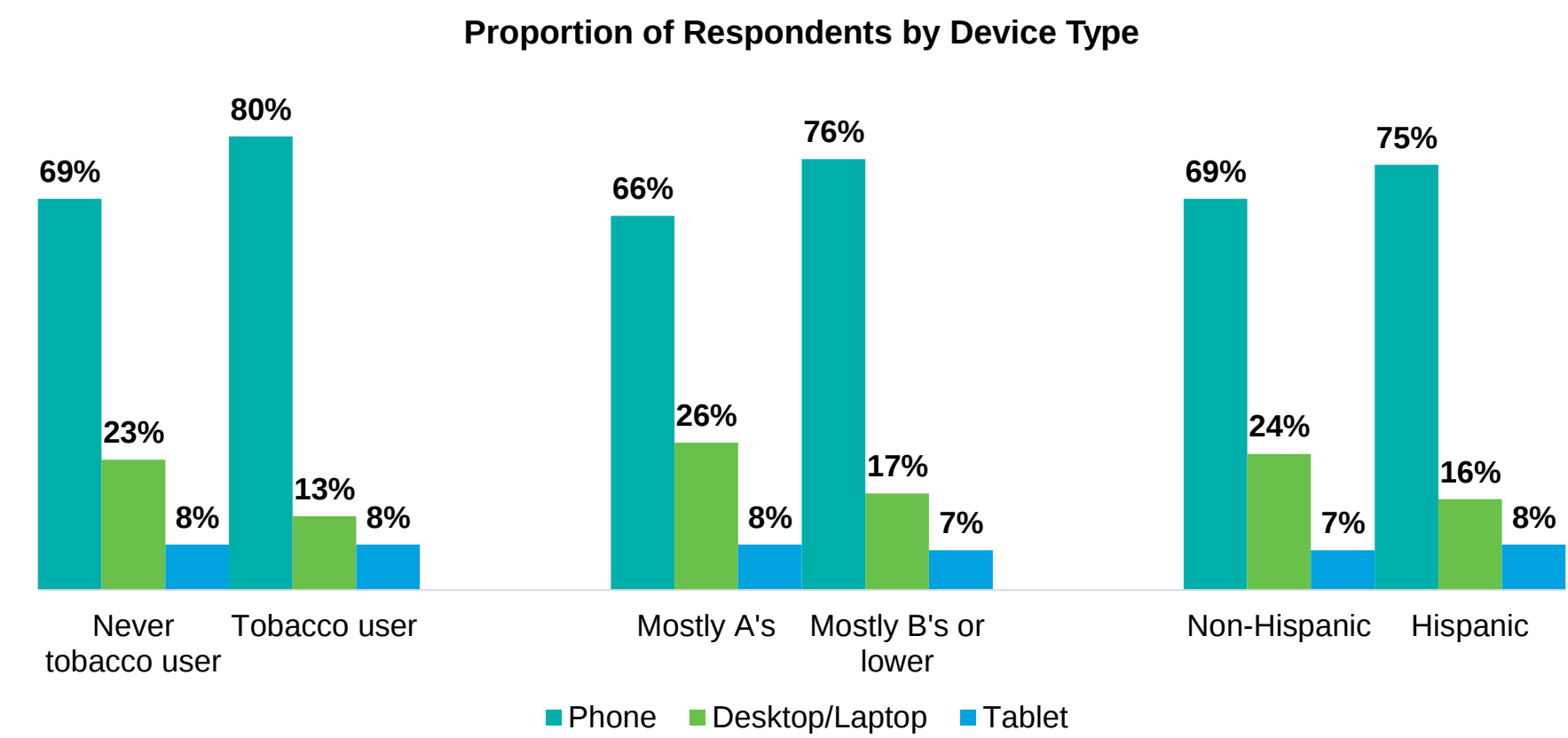
Survey completion varied based on tobacco use status, GPA, and ethnicity. Compared to tobacco users, students with a lower GPA, and Hispanic students, never tobacco users, student with a higher GPA, and non-Hispanic students tended to complete the survey in less time.

Duration as a Factor of Survey Length

Due to the nature of this survey, respondents who indicated that they had tried at least one tobacco product received follow-up questions, resulting in a longer survey. Interestingly, the median number of questions received among student reporting never using a tobacco product was not appreciably different than the number of questions among student reporting use of a tobacco product (124 vs. 125).

Additionally, the median number of questions received was the same for both students who completed the survey in 10 minutes or less and those who completed the survey in more than 10 minutes (124 questions). The median was also 124 questions for both students who completed the survey in 30 minutes or less of more than 30 minutes. This suggests that the number of questions received had little effect on survey completion time.

Device Type Among Sub-Groups



Device type varies among sub-groups

- Phone was the preferred device among all subgroups, but less so when comparing:
 - Never tobacco users vs tobacco users
 - Students who mostly get A's vs students with lower grades
 - Non-Hispanic students vs Hispanic students
- All differences were significant (Chi Square test)

Tobacco Use by Device Type

We tested for an association between smoking status and device type. We found that 23% of non-smokers first accessed the survey on a computer, compared with only 13% of smokers. Similarly, smokers were much more likely to first access the survey on a mobile phone, compared with non-smokers (79.6% and 69.2%, respectively).

GPA by Device Type

Students who are not Hispanic were more likely to first access the survey on a desktop or laptop than Hispanic students (24% and 16%, respectively). Furthermore, Hispanic students were 6% more likely to first access the survey on a mobile phone.

Ethnicity by Device Type

Students who received mostly A's were more likely to first access the survey on a computer than students who received mostly B's or below (26% and 17%, respectively). Similarly, A-students were less likely to first access the survey on a mobile phone than other students (66% and 76%, respectively).

Multivariate Model of Survey Completion as a Factor of Device Type

	Completion Duration 30 min			Completion Duration 10 min		
	Odds Ratio	lcl	ucl	Odds Ratio	lcl	ucl
Computer	2.6	2.1	3.4	2.2	1.5	3.2
Tablet	2.8	1.9	4.2	2.0	1.1	3.6
Tobacco user	1.4	1.1	1.8	1.8	1.1	3.2
Mostly B's or lower	1.5	1.2	1.8	1.6	1.1	2.4
Hispanic	--	--	--	1.6	1.0	2.3
Age	--	--	--	1.2	1.0	1.3

Model 1 – Odds Ratio for Completing a Survey in 30 min or less

We created two logistic regression models, hoping to identify demographic and paradata variables that significantly affect survey completion times. In the first model, we dichotomized completion time using a cutoff of 30 minutes. We began the analysis with a full model including the number of questions received, age, device, smoking status, ethnicity, GPA, and economic status. The odds of completing the survey in 30 minutes or less increase if the student first accesses the survey on a computer or tablet, if the student is a non-smoker, and if the student receives mostly A's in school.

Model 2 – Odds Ratio for Completing a Survey in 10 min or less

For the second logistic regression model presented in this analysis, we dichotomized completion time at 10 minutes. As in the previous model, we first included number of questions received age, device type, smoking status, ethnicity, GPA, and economic status. First accessing the questionnaire on a computer or tablet and being an A-student both substantially increased on the odds of completing the survey in 10 minutes or less. Age and ethnicity, while not significant in the previous model, are significant predictors of completing the survey in under 10 minutes.

Conclusion

We discovered several key predictors of survey completion time, including device type, smoking status, age, ethnicity, and GPA. Further investigation into confounding variables will be beneficial in better understanding completion times among high school students. Adding in additional time stamps to the survey will increase the accuracy of duration timing.