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# CODING THE FUTURE II:

## How income affects digital skills and opportunities

Results from Actua's National Coding Survey  
Prepared by Daniel Munro for Actua

## HIGHLIGHTS

- Actua conducted a first-of-its-kind survey of young Canadians' attitudes about coding education and careers, as well as the attitudes of their parents and guardians.
- Young Canadians from all income groups are equally interested in coding and digital technologies, but those in lower-income households are less likely to say they have access to digital technologies and learning opportunities.
- Students in lower-income households are 14 percentage points less likely than those from higher-income households to say their schools offer courses on coding and programming.
- Students from lower-income households are 5 to 13 percentage points less likely to say they have access to certain digital technologies like smartphones, tablets and computers.
- There is a case for improving access to digital technologies and learning opportunities among students from lower-income households to ensure their inclusion in an increasingly digital economy and society.

Actua conducted a national survey of young Canadians and their parents to understand their views about coding and digital literacy, their confidence in their coding and digital skills, and whether they feel they have opportunities to develop these skills in and outside of school. Our [first report](#) revealed that students are very enthusiastic, but also that there is a large gap between interest and opportunities to develop coding and digital skills. The analysis also uncovered differences in interest and opportunity across demographic factors, such as gender, age, region, household income and parents' educational attainment.

In this second briefing on our Coding the Future survey, we take a closer look at the impact of household income on coding and digital technology attitudes and opportunities. The results are discouraging. While young Canadians' interest in coding and digital literacy is high across all income levels, children from lower-income households are less likely than their peers from higher-income households to say they have opportunities to learn coding and digital skills and access to technology. To ensure that all Canadians are able to participate in and benefit from an increasingly digital economy, additional coding and technology opportunities for children from lower-income households will be needed.



## ABOUT THE SURVEY

Actua commissioned Abacus Data to conduct a representative, online survey of 1,500 young Canadians (aged 12 to 18) and their parents and guardians. Responses were collected between January 8 and January 11, 2018 from all regions and across key demographic characteristics, including gender, age, household income and parents' educational attainment.

Parents and guardians were contacted by Abacus Data, asked a few demographic questions and questions about their attitudes towards coding and digital literacy. Parents were then asked for their consent to have one of their children complete additional survey questions during the same session. Overall, we collected responses from 1,500 parents and guardians and 1,500 children. Of these, 1,308 provided estimated annual household income which allowed analysis of three income categories: Households earning less than \$40,000 (n=115), households earning between \$40,000 and \$100,000 (n=569), and households earning more than \$100,000 annually (n=624).

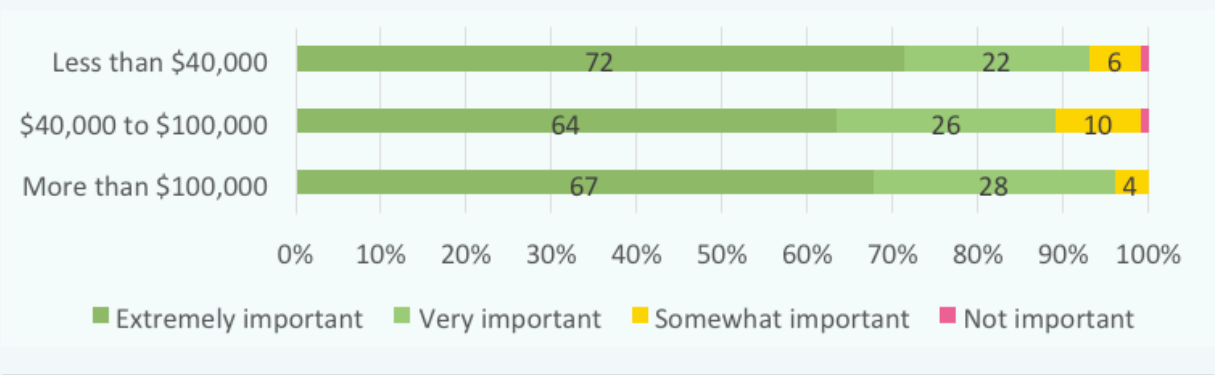
# EFFECTS OF HOUSEHOLD INCOME ON CODING ATTITUDES AND OPPORTUNITIES

## Perceived Importance of Technology and Coding for Careers Differs by Income

The vast majority of students believe that knowing how to use digital technologies will be important to future careers, and there is little variation by household income. In fact, students in the lowest income group are slightly more likely than students in the middle and highest income groups to say that these skills will be “extremely important.” By contrast, although most parents across all income groups believe that knowing how to use digital technologies will be important, lower-income parents (49 per cent) are less likely than higher-income parents (65 per cent) to view these skills as “extremely important.” It remains to be seen whether parents in lower-income households will be less likely to seek out and support digital learning opportunities for their children. But the difference is concerning.

In terms of programing, designing and making content for digital technologies, more than 7 in 10 young Canadians and their parents/guardians believe that these skills will be very or extremely important for future careers. While students from lower income households are slightly more likely than students from higher income households to say that these skills are “extremely important”—44 per cent and 36 per cent, respectively—students from all income groups are equally likely to say that they are at least “very important.”

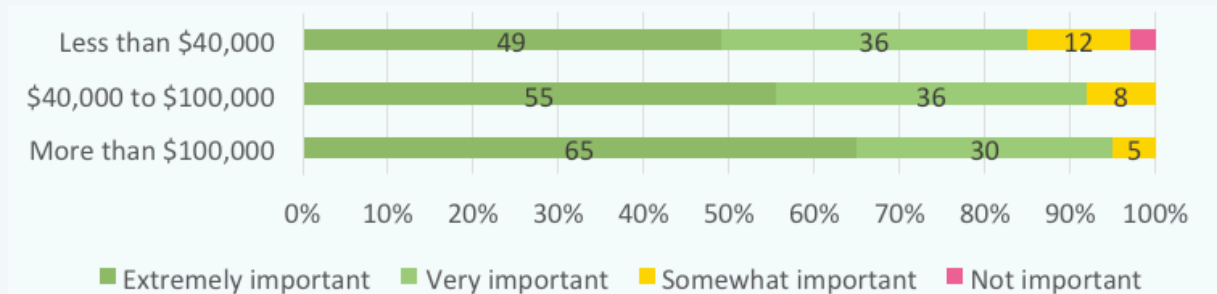
**How important do students think knowing how to use digital technologies will be to future careers?**  
(per cent, by household income)



Source: Actua, Coding the Future Survey.

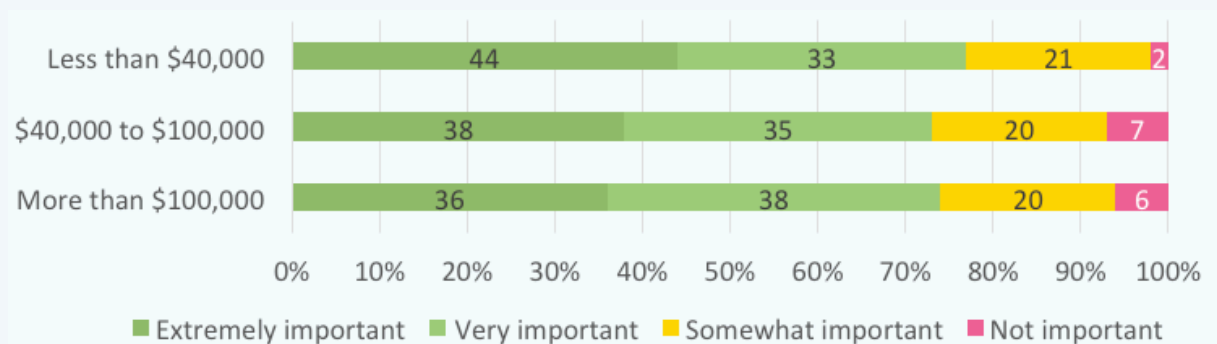


## How important do parents think knowing how to use digital technologies will be to future careers? (per cent, by household income)



Source: Actua, Coding the Future Survey.

## How important do *students* think knowing how to program, design and make content for digital technologies will be for future careers? (per cent, by household income)

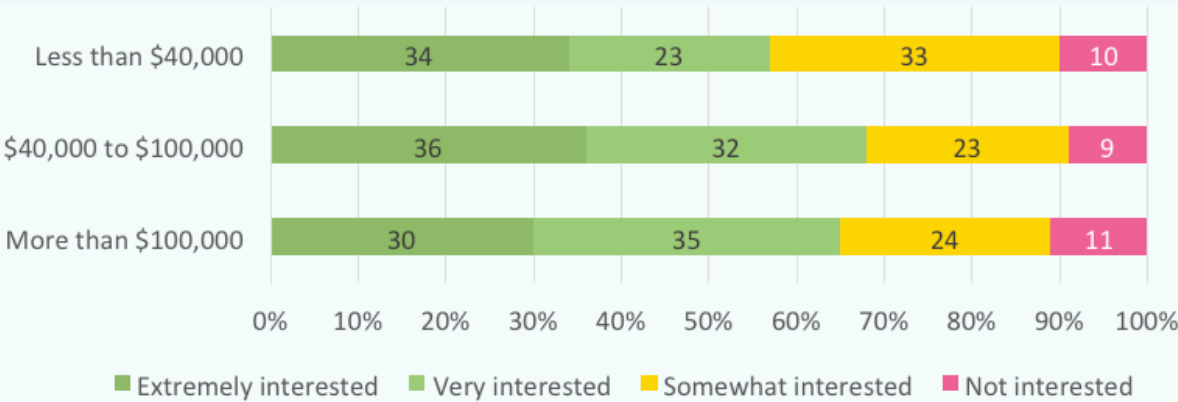


Source: Actua, Coding the Future Survey.

# Healthy Interest in Careers that Involve Digital Technologies and Coding

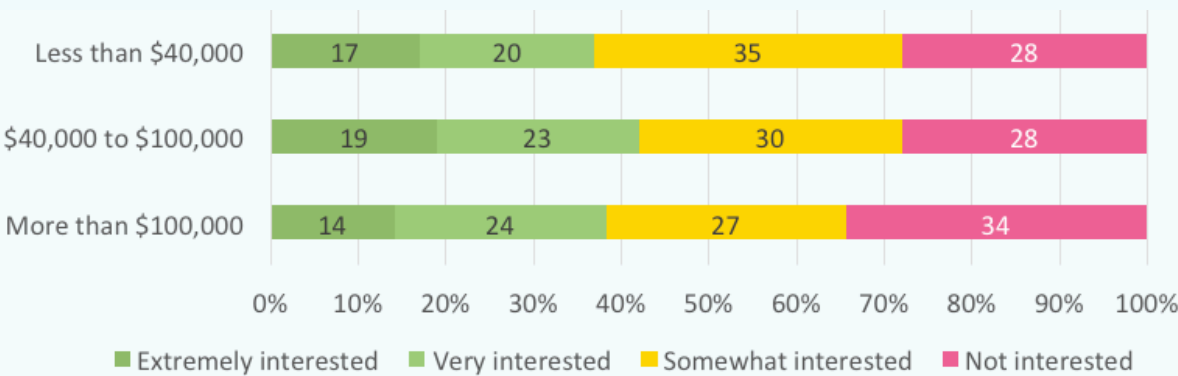
Large numbers of students from all income groups are interested in careers that use digital technologies and/or involve coding and programming. But there are some differences. Children from lower income households are slightly less likely to be interested in careers that involve using digital technologies than children from middle- and higher-income households. 57 per cent of children in lower-income households say that they are very or extremely interested in careers that involve *using digital technologies* versus 65 and 68 per cent for children from higher- and middle-income households, respectively. In terms of careers that involve *coding and programming*, children from all incomes levels are almost equally interested, with 37 per cent of lower-income, 38 per cent of higher-income, and 42 per cent of middle-income students saying that they are very or extremely interested.

## How interested are students in careers that involve using digital technologies? (per cent, by household income)



Source: Actua, Coding the Future Survey.

## How interested are students in careers that involve coding and programming? (per cent, by household income)



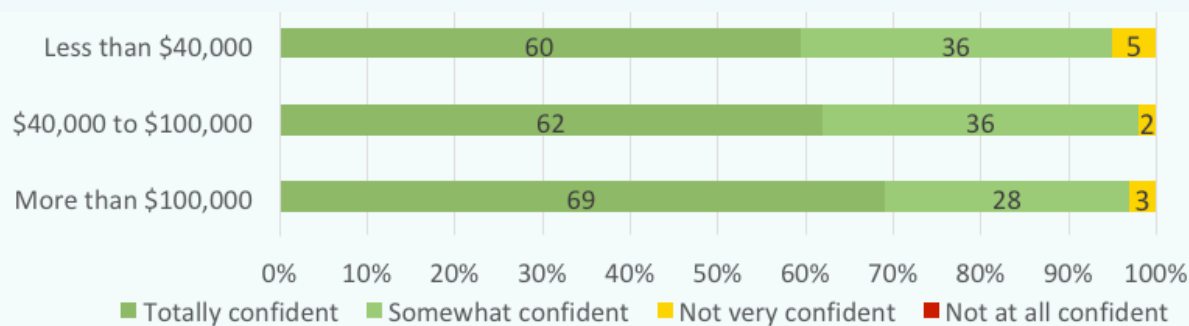
Source: Actua, Coding the Future Survey.

# Confidence in Digital Literacy and Coding Skills is Mixed

Young Canadians are generally confident in their ability to use digital technologies—such as computers, smartphones and tablets. But those from lower income households are less likely to report being “totally confident.” Although 69 per cent of students from higher income households report being totally confident in their ability to use digital technologies, this drops to 62 and 60 per cent for middle- and lower-income groups, respectively.

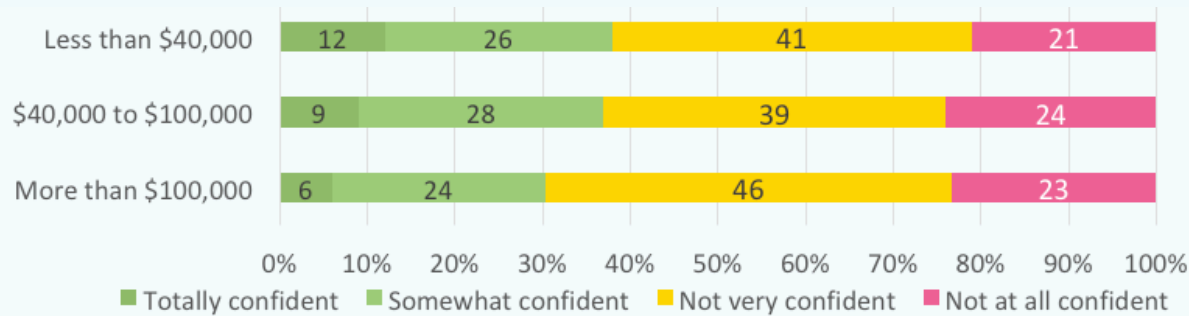
Young Canadians from lower-income households are slightly more likely to report being “totally confident” in their content design skills and coding and programming skills. While 17 per cent of young Canadians from lower-income households report total confidence in their content design skills, only 13 per cent of middle-income and 11 per cent of higher-income students report total confidence. Similarly, while 12 per cent of young Canadians from lower-income households report total confidence in their coding and programming skills, only 9 per cent of middle-income and 6 per cent of higher-income students report total confidence.

How confident are you in your ability to use digital technologies? (per cent, by household income)



Source: Actua, Coding the Future Survey.

How confident are you in your coding and programming skills? (per cent, by household income)



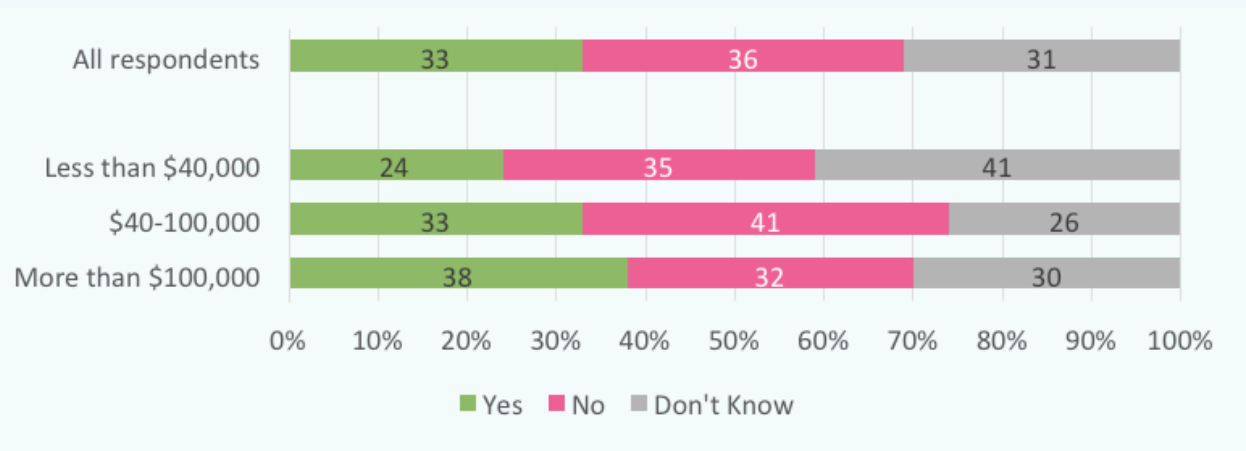
Source: Actua, Coding the Future Survey.

# Students From Low Income Households Have Fewer Opportunities to Learn Coding

Few young Canadians believe they have sufficient opportunities to learn how to code—whether in the formal school system or through informal learning opportunities outside of school. Even fewer young Canadians from lower-income households report having such opportunities.

When asked if their schools offered classes or units on coding or programming, only a third of students from all income groups said that they did. However, children in households with an income over \$100,000 are more likely than children in households with an income of less than \$40,000 to say that their schools offer coding classes or units (38 per cent and 24 per cent, respectively). More than half of all students from all income groups say that they would like to see more coding and programming classes in their schools.

To the best of your knowledge, does your school offer classes or units on coding or programming? (per cent)



Source: Actua, Coding the Future Survey.

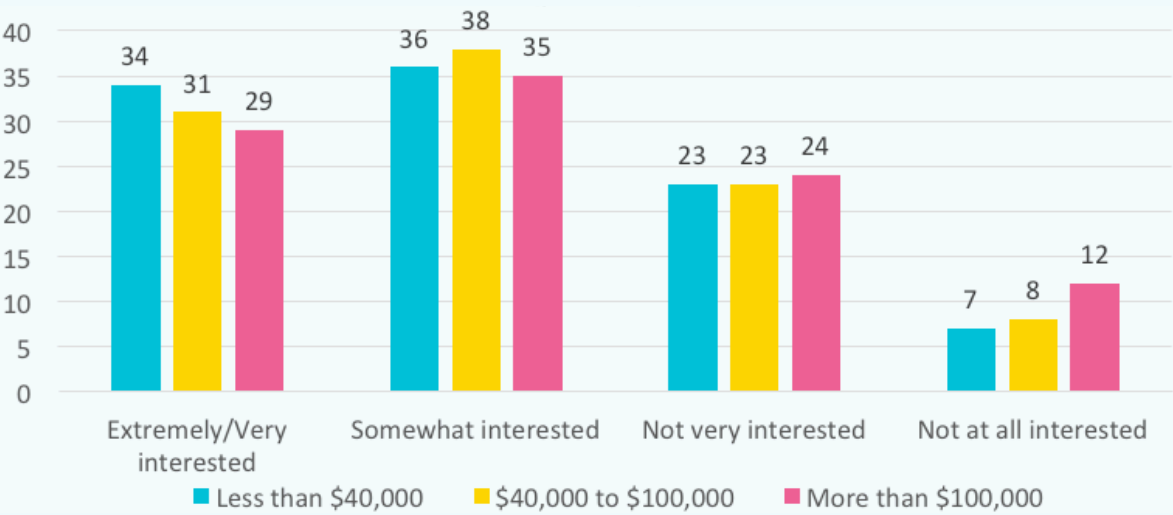


# Students From Low Income Households are Interested in Opportunities to Learn Coding Outside School

Very few young Canadians report participating in a coding or programming activity outside of school. Young Canadians from lower-income households are slight less likely (9 per cent) than those from middle-income (13 per cent) and higher-income (12 per cent) households to report participating in such activities outside of school, but these differences are not statistically significant. The vast majority of students from all income groups have not had an opportunity to participate in extracurricular coding and programming activities.

But students are interested in such opportunities. About a third of students from all income groups say they would be very or extremely interested in such opportunities if they were offered. Students from lower-income households express greater interest than their higher-income peers. While 70 per cent of students from lower-income households are somewhat, very or extremely interested in opportunities to learn coding outside of school, this falls to 64 per cent among higher-income students. The difference is not large but does suggest demand for such activities is higher among students from lower-income households.

**How interested are you in participating in a coding or programming class, camp or workshop outside school if one were offered to you? (per cent)**



Source: Actua, Coding the Future Survey.

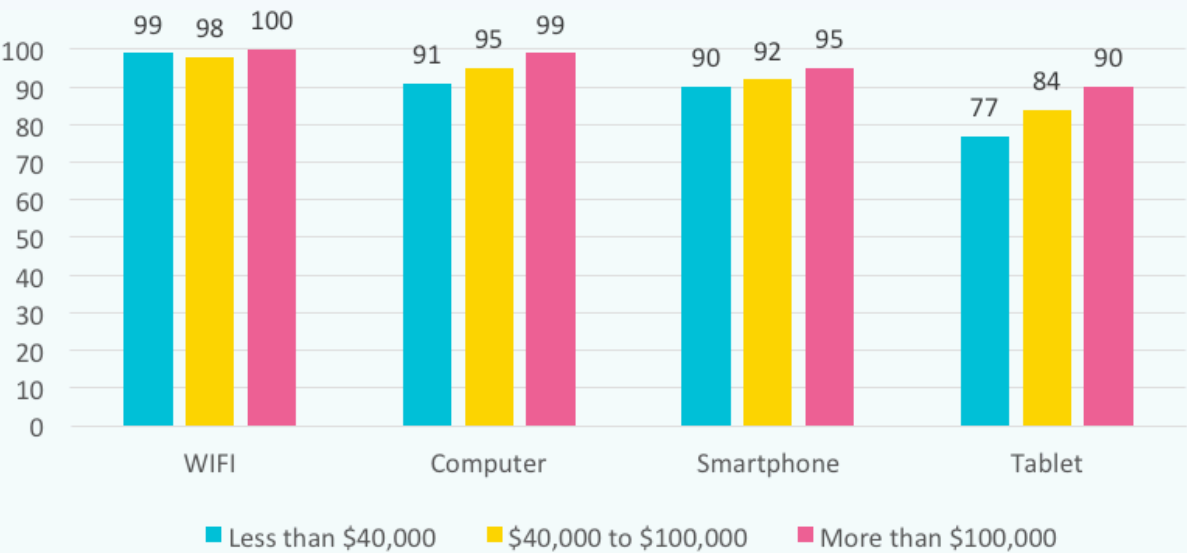
# Access to Digital Technologies

In addition to ensuring that young Canadians from all income backgrounds have opportunities to learn coding and digital skills, it is also essential that they have access to relevant technologies. The survey reveals access gaps among students from lower-income households.

Nearly all students report having access to wifi at home and the overwhelming majority report having personal or shared access to a computer and smartphone. Yet, while 99 per cent of young Canadians from higher-income households have access to a computer, that drops to 91 per cent among students from lower-income households—a difference of 8 percentage points, or about 1 in 12 students. An even greater difference is evident in access to tablets. Among students from lower-income households, 77 per cent have access to a tablet versus 90 per cent among students from higher-income households.

The differences are not very large, but are significant. Simply put, about 1 in 10 young Canadians from lower income households lack access to the kinds of technologies available to their higher-income peers. As a result, even if students have opportunities to learn coding and digital skills, many lack the technologies necessary to practice and reinforce their skills at home.

Do you have personal or shared access to the following technologies at home? (per cent with access)



Source: Actua, Coding the Future Survey.



## CONCLUSION

Young Canadians from all income groups show healthy interest in learning how to code and using digital technologies. Yet, students from lower income households are less likely than their higher-income peers to say that they have opportunities to learn coding and digital skills, and less likely to have access to relevant digital technologies. Although the differences are not large, they are significant and reveal that many lower-income students are at a disadvantage. Clearly, **there is a case for improving access to digital technologies and providing additional learning opportunities for students from lower-income households to ensure their full inclusion in an increasingly digital economy and society.**



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