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Digital Finance, Financial Literacy, and Early-Career Pay

Minnesota's Young Adults and Recent College Graduates

Findings from the 2021 American Community Survey, the 2021 National Financial Capability Study, and Minnesota Graduate Employment Outcomes

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All results, interpretations, and conclusions are those of the authors alone. They do not necessarily represent the views of Minnesota State University, Mankato, MD Financial Advisors, the FINRA Investor Education Foundation, the U.S. Census Bureau, or the Minnesota Department of Employment and Economic Development. The findings describe associations in the data. They are not estimates of cause and effect.

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Key Findings

This report looks at Minnesota young adults and recent college graduates in 2021. It uses three public data sources: the American Community Survey (ACS), the National Financial Capability Study (NFCS), and Minnesota Graduate Employment Outcomes (GEO). It asks four questions. Do young Minnesotans have access to internet and computer technology? Do they use digital financial tools? Do they know basic financial concepts, and how sure are they of their answers? And what do recent graduates earn by field of study?

Young graduates have the devices and the connection. Among working Minnesota bachelor's degree holders aged 24 to 27, 98.9% live in a household with a laptop or desktop, 99.7% with a smartphone, and 99.8% with home internet. 88.7% have high-speed broadband.

Access gaps remain for lower-income and less-educated adults. Among Minnesotans aged 22 to 64, 68.6% of those below the poverty line have high-speed broadband at home, compared with 89.4% of those with incomes of 5 times the poverty line or more.

Young adults are the heaviest users of digital finance. In the NFCS, 70.2% of Minnesota respondents aged 18 to 34 used at least 3 of 4 digital financial channels (online banking, mobile banking, phone payments in stores, and phone transfers), compared with 21.1% of those 55 and older.

Using more digital channels does not go with more financial knowledge. Once education, age, income, gender, and financial circumstances are taken into account, the number of digital channels a person uses is not linked to answering three standard financial literacy questions correctly. The same holds for respondents aged 18 to 34.

Women are far more likely to answer "don't know." 56.7% of Minnesota women chose "don't know" on at least one of the three questions, compared with 28.7% of men. The shares who answered every question but got at least one wrong were about the same (18.3% and 16.8%). With other factors held equal, women were about 22 percentage points more likely than men to answer "don't know."

The "don't know" pattern appears at every age, and it is not a gap in self-rated knowledge. About half of women in each age group gave at least one "don't know" answer. Men and women who gave the same kind of answers rated their own financial knowledge about the same.

Education, savings, and coursework go with higher literacy. Holding other factors equal, a bachelor's degree is associated with a 22 percentage point higher chance of answering all three questions correctly, a three-month emergency fund with 13 points, and a high school or college financial education course with 12 points.

Early-career pay follows field of study. The statewide median hourly wage of 2019 bachelor's graduates in their third year after graduation was $30.63. It was $47.77 in health professions, $41.20 in computer and information sciences, and $40.20 in engineering, compared with $23.62 in biology and $21.89 in the visual and performing arts. Raises from year 2 to year 3 were similar across fields (median 7.1%).

Computing majors earn more mainly by working in computing jobs. Among working bachelor's holders aged 24 to 27, computing majors earned about 41% more per hour than graduates in the comparison group of majors. Once computer and engineering occupations are taken into account, the difference is about 2% and not statistically significant. Home broadband and devices are not significant predictors of pay.

What this means for Minnesota

- Digital access, digital finance use, and financial knowledge are separate goals. Progress on one should not be read as progress on the others.
- Minnesota's new personal finance graduation requirement starts with the class of 2028. Evaluations should report "don't know" answers separately from wrong answers, by gender.
- For students choosing a major, pay differences come from field of study and the jobs it leads to, not from technology access.

About This Report

Young adults in Minnesota use mobile banking and payment apps more than older adults. A common assumption is that comfort with digital tools also builds financial knowledge. This report tests that assumption with Minnesota data, and it follows recent college graduates into their first years of work.

Research on "digital financial literacy" often treats the use of digital financial services as part of financial literacy or as a path to it (Lyons & Kass-Hanna, 2021). Other research finds that women are more likely than men to answer "don't know" on financial knowledge questions, and that many of those answers hide real knowledge (Bucher-Koenen et al., 2017; Bucher-Koenen et al., 2025). We look at both questions with Minnesota data.

No single survey measures technology access, digital finance use, financial knowledge, and early-career pay together. We use three public sources, each for what it measures well. All three refer mainly to 2021.

Table 1. Three data sources at a glance

	American Community Survey (ACS)	National Financial Capability Study (NFCS)	Graduate Employment Outcomes (GEO)
Source	U.S. Census Bureau, 2021 1-year microdata	FINRA Investor Education Foundation, 2021 State-by-State Survey	Minnesota Department of Employment and Economic Development (DEED)
What it measures	Household internet and devices, wages, field of degree, job	Use of digital financial channels, financial knowledge, confidence	Median hourly wages of graduates by program
Who is in this report	Minnesota bachelor's holders aged 24–27 (673 workers); adults by age, education, and income	500 Minnesota adults; ages 18–34 where the sample allows (115 in the model sample)	2019 bachelor's cohort (July 2018–June 2019): 32,848 graduates, 20,253 with year-3 wages
Period	Interviews during 2021	June–October 2021	Year 3 after graduation, mostly 2021

Note: The three sources cannot be linked person by person. They are compared at the state level. See the Data and Methods section.

How to read this report

- **Full sample or young adults.** NFCS results use all Minnesota respondents unless a figure says "ages 18–34." The young-adult group is small (115 to 149 respondents, depending on the measure), so we show it where it adds information and use the full sample otherwise.
- **Percentage points.** A "22 percentage point" difference means, for example, 50% versus 28%.
- **"Holding other factors equal."** Some results come from statistical models that compare people who are alike on education, age, income, gender, and other traits. These are associations, not causes.
- **Statistically significant.** A difference is called significant when it is unlikely to be due to chance alone (5% level). NFCS significance tests are approximate because the survey uses an online panel.

Digital Access

Access to devices and home internet is close to universal for Minnesota's young college graduates. Gaps that remain are concentrated among older adults and in lower-income and less-educated households.

Nearly every young graduate has a computer, a smartphone, and home internet. Among the 673 working bachelor's holders aged 24 to 27 in the 2021 ACS, only 9 lived in a household without a laptop or desktop and 7 without a smartphone. High-speed broadband (cable, fiber, or DSL) was less common, at 88.7%.

Figure 1. Household technology access, working Minnesota bachelor's holders aged 24–27, 2021

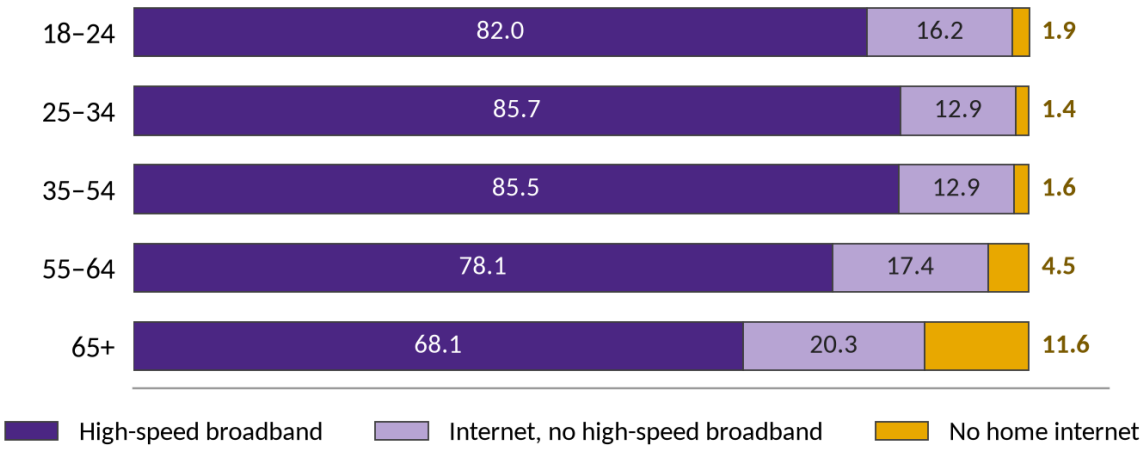


Source: 2021 ACS 1-year microdata, Minnesota; weighted. Workers with a bachelor's degree as their highest degree, positive wages and hours (n = 673). Household items: they show what the household has, not individual use or skill.

Laptop and desktop access rose before 2021 and stayed high. Among bachelor's holders aged 24 to 27 who worked, household laptop or desktop access rose from 95.9% in 2019 to 98.9% in 2021 and was 98.5% in 2022. Smartphone access (99.7%, 99.7%, 99.1%) and high-speed broadband (88.9%, 88.7%, 85.9%) did not change significantly.

Young adults are about as connected as middle-aged adults. Older adults are the least connected. Among all Minnesota adults in households, 1.9% of those aged 18 to 24 and 1.4% of those aged 25 to 34 had no home internet, compared with 11.6% of those 65 and older.

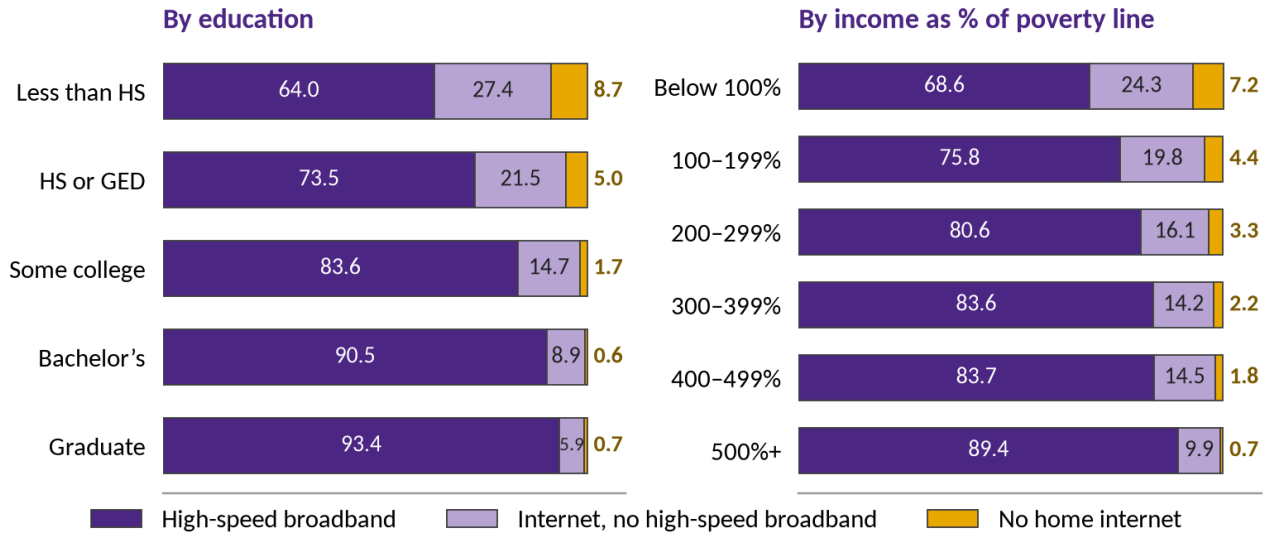
Figure 2. Household internet status by age, Minnesota adults, 2021 (%)



Source: 2021 ACS 1-year microdata, Minnesota; weighted; persons in housing units. Recomputed for this report from the local ACS file with the definitions of the working paper's appendix figures. High-speed broadband = cable, fiber optic, or DSL. Group-quarters residents (for example, dormitories) have no internet items and are excluded.

Income and education gaps in high-speed broadband are wide. Among adults aged 22 to 64, 64.0% of those without a high school diploma had high-speed broadband at home, compared with 90.5% of bachelor's holders. 7.2% of adults below the poverty line had no home internet at all, compared with 0.7% of those at 5 times the poverty line or more.

Figure 3. Household internet status by education and by income, Minnesota adults aged 22–64, 2021 (%)



Source: 2021 ACS 1-year microdata, Minnesota; weighted; persons aged 22–64 in housing units (n = 28,681). Income as a percent of the federal poverty threshold. Values for the smallest segments recomputed from the local ACS file.

Access is not the same as use or skill

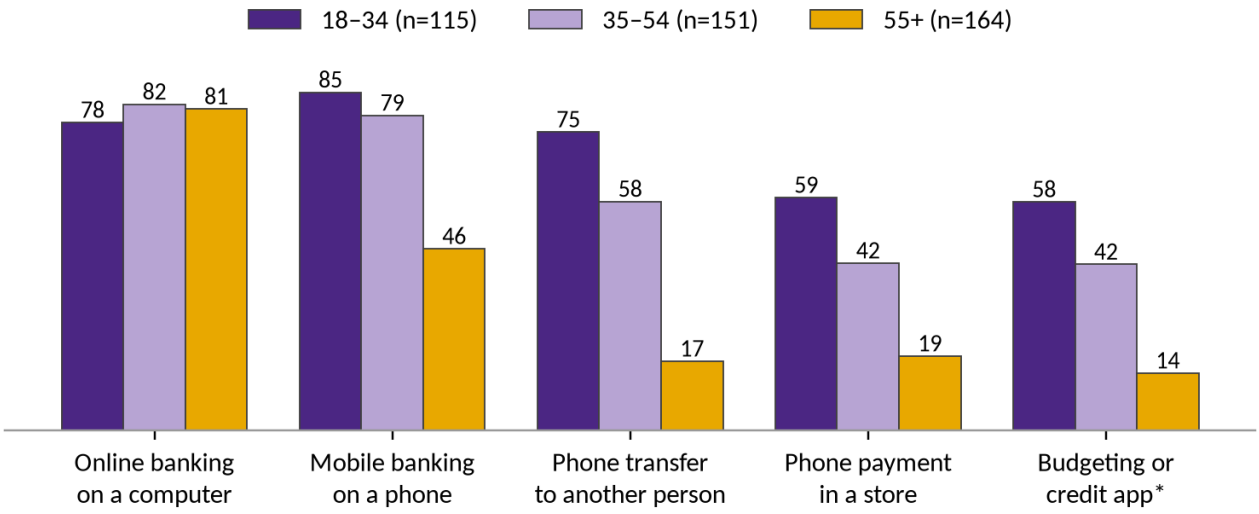
The ACS asks whether the household has a computer, a smartphone, and an internet connection. It does not ask whether a person uses them for money matters, or how well. Many 24- to 27-year-olds live with roommates or parents, so household access may describe the household more than the graduate. The NFCS measures use. Neither survey tests skill.

Digital Finance Use

The NFCS asks how often people use four digital channels for money: online banking on a computer, mobile banking on a phone, phone payments in stores, and phone transfers to other people. It also asks about websites or apps for budgeting, saving, or credit management. We count a channel as used if the respondent uses it at least sometimes.

Young adults use mobile channels far more than older adults. Among respondents aged 18 to 34, 85.1% used mobile banking and 75.1% sent money to other people by phone, compared with 45.7% and 17.4% of those 55 and older. Online banking on a computer was common at every age (77.5% to 82.1%).

Figure 4. Use of digital financial channels by age, Minnesota, 2021 (% using at least sometimes)

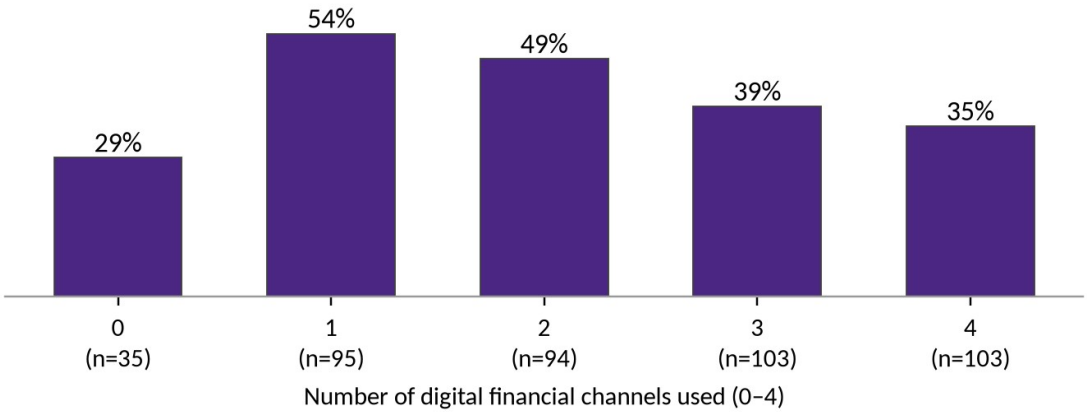


Source: NFCS 2021 State-by-State Survey, Minnesota; weighted. Model sample of the working paper (N = 430). Shares by age recomputed for this report from the local NFCS file; the all-ages shares match the working paper. *Budgeting, saving, or credit-management websites or apps; not one of the four channels. Mobile and online banking were asked only of people with a bank account; others count as not using.

Across all ages, online banking is the most common channel. 80.4% of Minnesota respondents used online banking on a computer, 66.8% mobile banking, 45.3% phone transfers, and 36.5% phone payments in stores. 34.4% used a budgeting or credit app. Men and women used each channel at similar rates.

People who use more channels do not answer the knowledge questions better. Respondents who used no channels were the least likely to answer all three questions correctly (29%), but the share did not rise with more channels. It was 54% among those using 1 channel and 35% among those using all 4.

Figure 5. Share answering all three financial literacy questions correctly, by number of digital channels used, Minnesota, 2021



Source: NFCS 2021 State-by-State Survey, Minnesota; weighted; model sample (N = 430). "Don't know" counts as not correct. Unadjusted shares; see the text for results that hold other factors equal.

Holding other factors equal, digital channel use and budgeting apps show no link to financial knowledge. Each additional channel is associated with a 1.7 percentage point lower chance of answering all three questions correctly, a difference that is not statistically significant. Budgeting-app use is also not significant (1.3 points lower). In a machine-learning check that ranks 13 groups of predictors, the number of channels ranked last. Among respondents aged 18 to 34, channel use was again not significant.

Young adults at a glance (NFCS, Minnesota, ages 18–34)

- 70.2% used at least 3 of the 4 digital channels, compared with 46.4% of all respondents (model sample, 115 young adults).
- They answered 2.06 of 5 standard knowledge questions correctly on average, compared with 2.86 for all Minnesota respondents (149 young adults).
- 28.9% of young men and 11.2% of young women answered all three core questions correctly (115 young adults).
- 30.4% owned investments outside retirement accounts, compared with 41.3% of those 35 and older (149 young adults).

The young-adult group is small, so these figures are descriptive. The 70.2% and 46.4% shares were recomputed for this report.

Financial Literacy and Confidence

The three core financial literacy questions

The NFCS asks three standard questions, often called the "Big Three." They cover **compound interest** (how savings grow), **inflation** (what happens to buying power when prices rise faster than interest), and **risk diversification** (whether one company's stock is safer than a mutual fund). Each question offers a "don't know" option. In this report, a person is financially literate if they answer all three correctly.

Minnesota scores above the national average, mainly because of men. Minnesota respondents answered 2.86 of five standard questions correctly, compared with 2.58 nationally. Minnesota men averaged 3.35 correct answers, against 2.9 nationally. Minnesota women averaged 2.38, close to the national figure for women (2.3). 38.7% of Minnesota respondents answered all three core questions correctly.

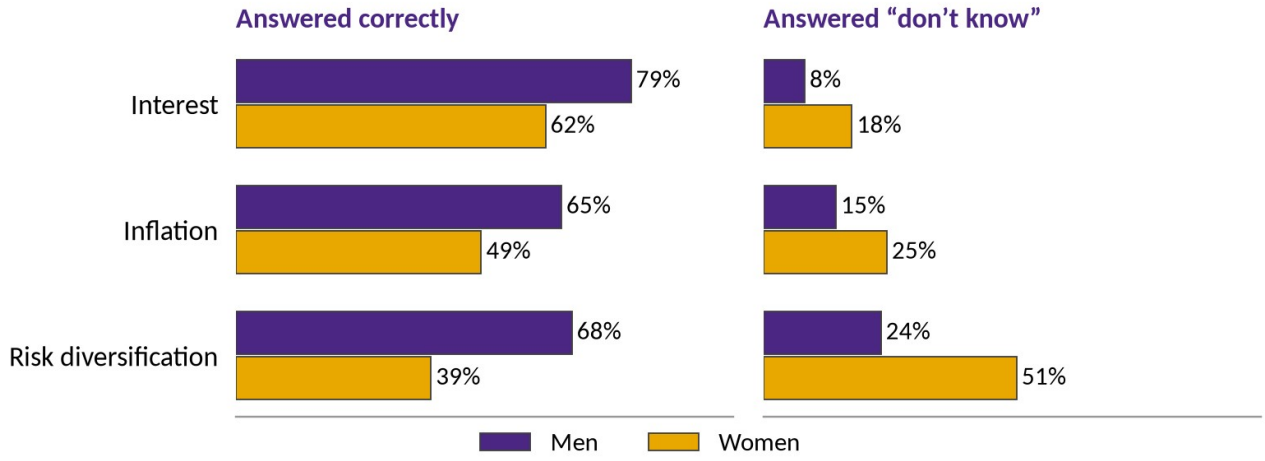
Table 2. Financial literacy in the 2021 NFCS: Minnesota and the United States

Measure	Minnesota	United States
Average correct, five questions (0–5)	2.86	2.58
Average "don't know," five questions (0–5)	1.25	1.45
Average correct, men	3.35	2.9
Average correct, women	2.38	2.3
Average correct, ages 55 and older	3.44	3.1
Probability question answered correctly	46.9%	36%
Probability question, "don't know"	26.1%	33%

Source: Minnesota, NFCS 2021 State-by-State Survey, all 500 Minnesota respondents, weighted. United States, as published by Urban and Valdes (2022) and Lin et al. (2022). Minnesota's youngest age band (18–34) does not match the national bands, so it is not compared. Differences are descriptive.

Women most often say "don't know" on risk diversification. 50.9% of Minnesota women answered "don't know" on the risk question, compared with 23.6% of men. The gap was smaller on interest (17.8% vs. 8.3%) and inflation (24.8% vs. 14.6%).

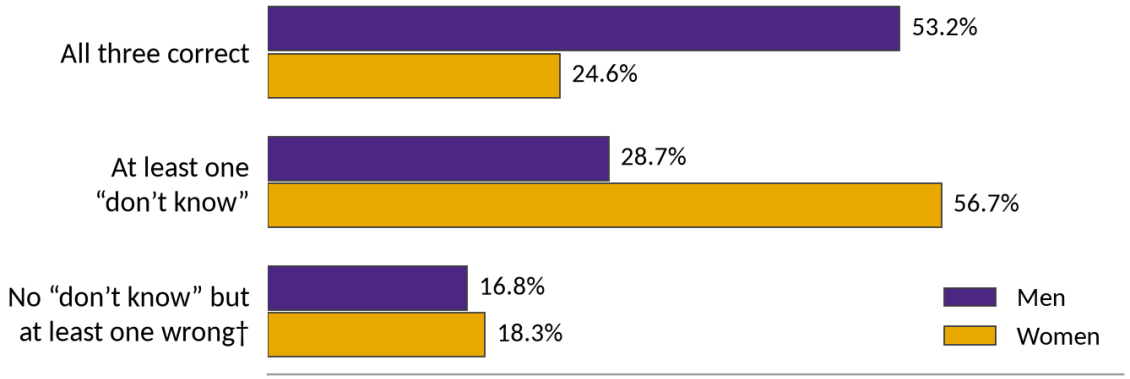
Figure 6. Answers to the three core questions by gender, Minnesota, 2021



Source: NFCS 2021 State-by-State Survey, Minnesota; weighted; all respondents (245 men, 255 women).

The gender gap is mostly a "don't know" gap. 53.2% of men and 24.6% of women answered all three questions correctly. Women were twice as likely as men to choose "don't know" at least once (56.7% vs. 28.7%). Among those who never chose "don't know," the shares who still missed a question were similar.

Figure 7. Core-question outcomes by gender, Minnesota, 2021



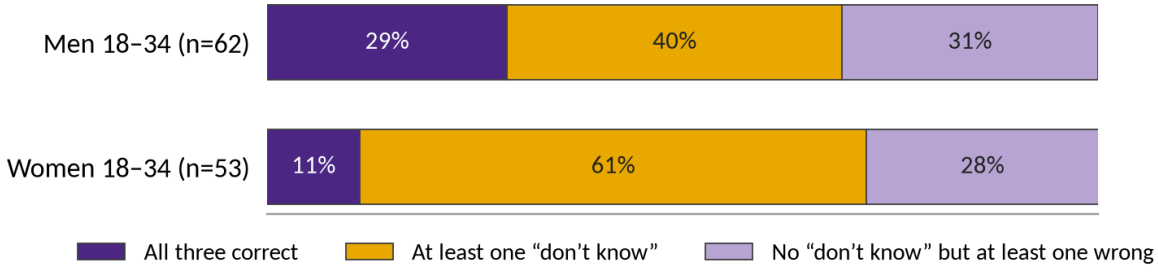
Source: NFCS 2021 State-by-State Survey, Minnesota; weighted; all respondents (N = 500). †Based on the 496 respondents without a refusal.

Holding other factors equal, women were about 22 percentage points more likely to answer "don't know." Comparing men and women of the same age, education, income, savings, and digital use, women were 27 percentage points less likely to answer all three questions correctly and 22 points more likely to give at least one "don't know." The difference in wrong answers without "don't know" (5 points) was not significant.

Young adults: the same pattern, with smaller numbers

Among Minnesotans aged 18 to 34, 61% of women gave at least one "don't know." Only 11% of young women and 29% of young men answered all three questions correctly. Young men were more likely than older men to answer without "don't know" and get a question wrong (31%).

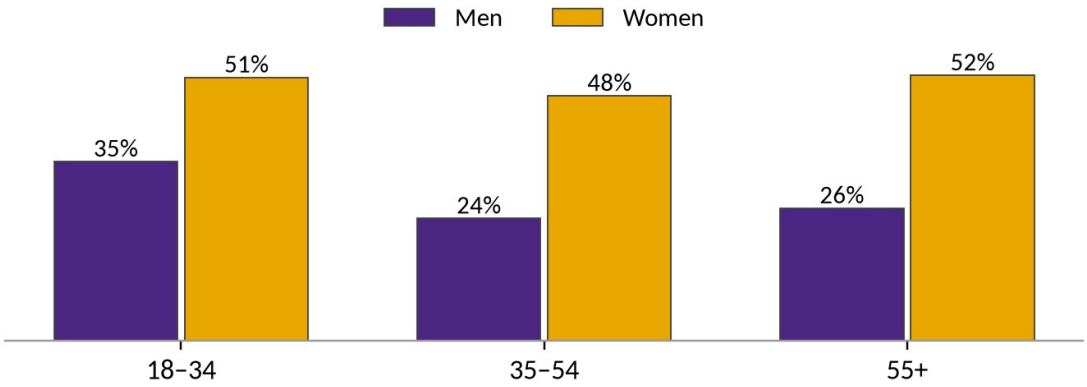
Figure 8. Core-question outcomes, Minnesota respondents aged 18–34, by gender, 2021



Source: NFCS 2021 State-by-State Survey, Minnesota; weighted; young-adult subset of the model sample (N = 115). Small sample; shares are descriptive.

Women's "don't know" rate stays near one half at every age. Holding other factors equal, the predicted share of women giving at least one "don't know" was 51% at ages 18 to 34, 48% at 35 to 54, and 52% at 55 and older. For men it fell from 35% to 24% and 26%. The gender gap was 16 points among young adults, which is not statistically significant in this small group, and 24 to 26 points among older adults.

Figure 9. Predicted share giving at least one "don't know," by age and gender, holding other factors equal, Minnesota, 2021

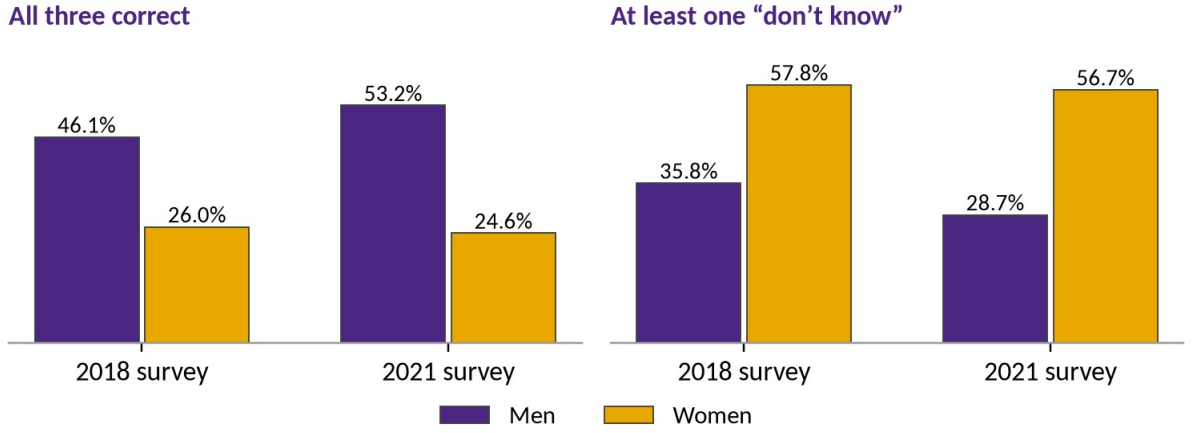


Source: NFCS 2021 State-by-State Survey, Minnesota; weighted; full model sample (N = 429; 115 aged 18–34). Predicted probabilities from a model that holds education, income, savings, digital use, and other traits at their observed values.

Confidence, not self-rated knowledge, separates the groups. On a 1-to-7 scale, men and women who gave no "don't know" rated their own knowledge almost the same (5.5 and 5.4), as did men and women who gave at least one (4.8 and 4.7). Respondents who skipped "don't know" but missed a question rated their knowledge about as high as those who got all three right (5.4 vs. 5.5). Self-rated knowledge does not predict answering correctly once other factors are held equal.

The pattern was not created by the pandemic. In the 2018 NFCS, 57.8% of Minnesota women gave at least one "don't know," compared with 56.7% in 2021. The share of all respondents answering all three questions correctly was 35.9% in 2018 and 38.7% in 2021, not a significant change.

Figure 10. Core-question outcomes by gender, Minnesota, 2018 and 2021 NFCS waves



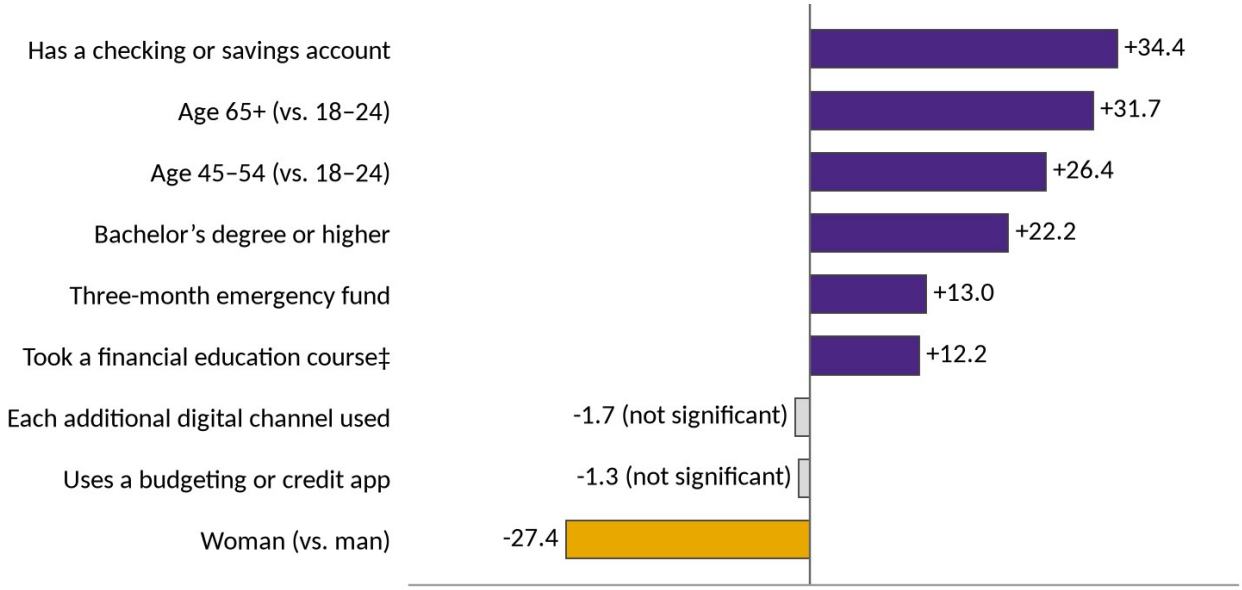
Source: NFCS State-by-State Survey, Minnesota, 2018 and 2021 waves; weighted; all respondents (501 in 2018, 500 in 2021). Same question wording and scoring in both waves. The gender gaps are significant in both waves.

Does "don't know" mean no knowledge?

Not always. Experiments find that many women who choose "don't know" pick the right answer when that option is removed (Bucher-Koenen et al., 2025; Marley-Payne et al., 2024). Our data cannot tell whether a given "don't know" hides knowledge. They do show that scoring "don't know" as wrong merges two different ways of missing a question, and that men and women miss in different ways.

A degree, an emergency fund, and a financial education course go with higher literacy. Holding other factors equal, the chance of answering all three questions correctly was 22 percentage points higher with a bachelor's degree, 13 points higher with a three-month emergency fund, and 12 points higher among those who took a high school or college financial education course. People aged 45 and older were 24 to 32 points more likely than those aged 18 to 24 to answer all three correctly. Household income, race, and employment status were not significant once these factors were included.

Figure 11. How each factor relates to the chance of answering all three questions correctly (percentage points), holding other factors equal, Minnesota, 2021



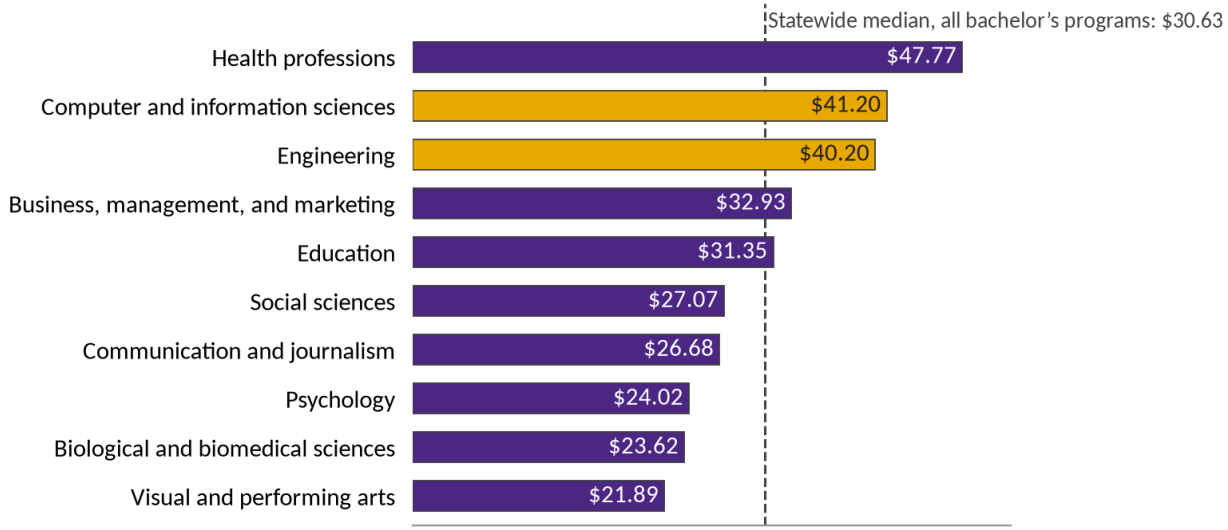
Source: NFCS 2021 State-by-State Survey, Minnesota; weighted; model sample (N = 430). Average percentage-point differences from a weighted logistic regression. Gray bars are not statistically significant. The bank account estimate is imprecise: only 16 of 430 respondents had no account. ‡From a separate model of the 378 respondents who knew whether they had taken a course.

Early-Career Pay by Field and Technology

GEO follows graduates of Minnesota colleges into Minnesota jobs covered by unemployment insurance. We use the 2019 bachelor's cohort (July 2018 to June 2019). Their third-year wage is measured mostly in 2021, the same year as the ACS and NFCS. Of 32,848 graduates, 20,253 (61.7%) had a reported Minnesota wage in year 3. A missing wage does not mean unemployment: graduates who work in other states, for the federal government, or for themselves are not observed.

Third-year pay ranges from about $22 to $48 an hour across large fields. DEED's statewide median hourly wage for all bachelor's programs in this cohort was $30.63 in the third year. Health professions led the ten largest fields at $47.77, followed by computer and information sciences ($41.20) and engineering ($40.20).

Figure 12. Median hourly wage in year 3 after graduation, ten largest bachelor's fields, 2019 cohort



Source: DEED Graduate Employment Outcomes, July 2018–June 2019 bachelor's cohort, Minnesota statewide, downloaded October 7, 2026. Two-digit CIP fields. Median hourly wage in the first three months of year 3. Dollar basis as published by DEED (see Data and Methods).

Table 3. Ten largest bachelor's fields, 2019 cohort: graduates and median hourly wage

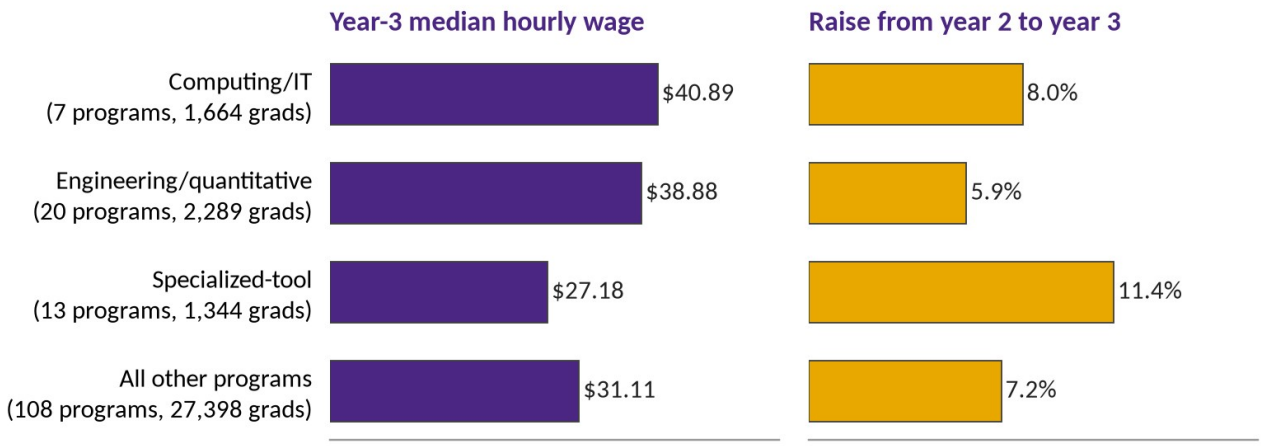
Field	Graduates	With year-3 wages	Year 2	Year 3	Raise
Business, management, and marketing	6,185	4,041	$30.25	$32.93	8.9%
Health professions	4,098	2,960	$45.81	$47.77	4.3%
Education	2,421	1,609	$29.51	$31.35	6.2%
Biological and biomedical sciences	2,373	1,275	$22.00	$23.62	7.4%
Social sciences	2,200	1,179	$25.53	$27.07	6.0%
Psychology	1,887	1,171	$22.30	$24.02	7.7%
Computer and information sciences	1,618	966	$38.52	$41.20	7.0%
Engineering	1,561	1,023	$38.11	$40.20	5.5%
Communication and journalism	1,331	860	$24.40	$26.68	9.3%
Visual and performing arts	1,259	696	$21.09	$21.89	3.8%

Source: DEED Graduate Employment Outcomes, July 2018–June 2019 bachelor's cohort, Minnesota statewide. Year 2 and year 3 = first three months of the second and third years after graduation.

Computing and engineering pay well, but they are a small share of graduates. Computing and IT programs produced about 5% of the cohort's graduates. Computing, IT, engineering, and quantitative programs together produced about 12%.

Raises are similar across fields. Among 125 programs with both year-2 and year-3 wages, the median raise was 7.1%. Grouped by the technology content of the curriculum, raises ranged from 6% to 11%. Computing programs did not get faster raises than other programs. The difference is in the starting level.

Figure 13. Year-3 median hourly wage and year-2 to year-3 raise, by technology content of the program, 2019 cohort

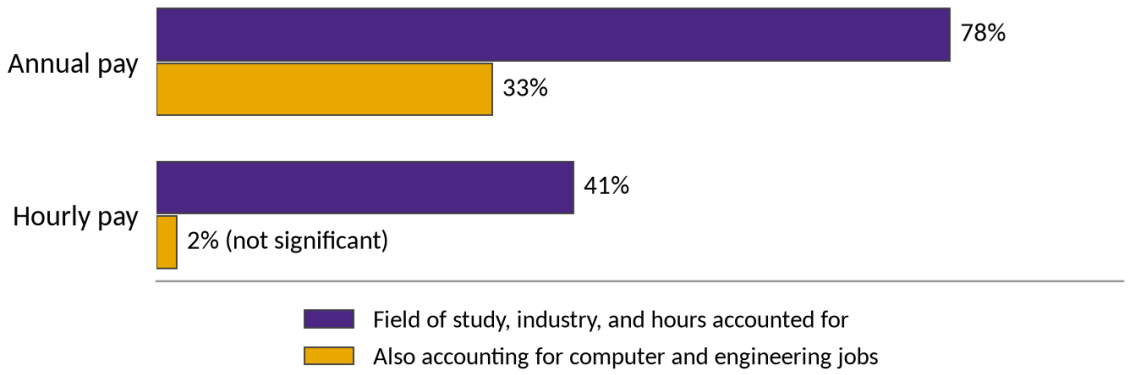


Source: DEED Graduate Employment Outcomes, July 2018–June 2019 bachelor's cohort; 148 four-digit programs. Program medians weighted by graduates with year-3 wages. Computing/IT: CIP 11 and 52.12; engineering/quantitative: CIP 14, 15, 27; specialized-tool: CIP 03, 04, 10, 40, 49. The grouping describes curriculum, not graduates' skills. The "all other" average is pulled up by registered nursing ($50.28).

In the ACS, young graduates' pay follows field, industry, and job. The weighted median hourly wage of the 673 working bachelor's holders aged 24 to 27 was $24.04. Holding hours, age, industry, and other traits equal, computing majors earned about 78% more per year and 41% more per hour than the comparison group of majors. The finance industry paid about 61% more per year than the comparison group of industries.

The computing premium runs through computing and engineering jobs. When computer and engineering occupations are added, the hourly premium of computing majors falls to about 2% and is no longer significant. The annual premium falls to about 33%, which points to more weeks of work rather than a higher hourly rate.

Figure 14. Pay premium of computing majors, Minnesota bachelor's holders aged 24–27, before and after accounting for occupation, 2021



Source: 2021 ACS 1-year microdata, Minnesota; weighted; 673 workers. Percent differences from weighted regressions of log wages, compared with majors outside computing, engineering/quantitative, and specialized-tool fields (finance majors are in the comparison group). Only 25 workers had a computing major, so estimates are imprecise. The 33% and 2% values are conversions of the published coefficients (0.284 and 0.022) with the formula 100 × (e^b − 1).

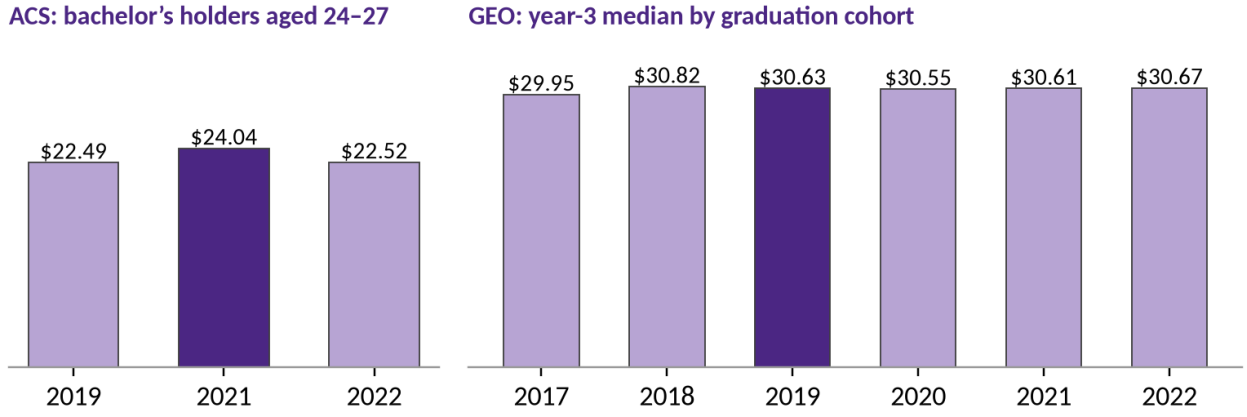
Home broadband and devices do not predict pay at these ages. High-speed broadband was not a significant predictor of annual or hourly pay. Adding laptop, smartphone, and home internet access did not change the results, because nearly everyone had them.

Why the ACS and GEO medians differ

The ACS median for ages 24 to 27 ($24.04) is lower than the GEO median for the 2019 cohort ($30.63). The two are not on a confirmed common dollar basis. GEO counts only graduates with Minnesota unemployment-insurance wages in one quarter. The ACS divides 12 months of earnings by reported hours and weeks, and it includes graduates who moved to Minnesota from elsewhere. The comparison is approximate.

2021 does not look like an outlier. DEED's statewide third-year median was flat across the 2017 to 2022 graduation cohorts, from $29.95 to $30.82. In the ACS, the median hourly wage of bachelor's holders aged 24 to 27 was $22.49 in 2019, $24.04 in 2021, and $22.52 in 2022, after adjusting for inflation.

Figure 15. Median hourly wage of young Minnesota graduates over time



Source: Left, 2021-dollar ACS 1-year medians for working bachelor's holders aged 24–27 (2019 and 2022 converted with the CPI-U; 2020 not released as standard data). Right, DEED statewide year-3 median hourly wage for all bachelor's programs, by graduation cohort (cohort 2019 = July 2018–June 2019, used in this report), inflation-adjusted per DEED. The two panels are not on a common dollar basis.

What It Means for Minnesota

These findings come from one state and one year, and they are associations. With that in mind, they point to five practical lessons.

1. Treat access, use, and knowledge as separate goals

Young graduates have the devices and connections they need, and young adults use digital financial channels more than anyone. But using more channels does not go with knowing more about interest, inflation, or risk. Closing the remaining access gaps for lower-income households and older adults matters on its own terms. It should not be expected to raise financial knowledge by itself.

2. Report "don't know" answers separately

Most of the gender gap in measured literacy is "don't know," not wrong answers. Tests that score "don't know" as wrong mix up uncertainty and error, and they do so more for women. Program evaluations and classroom pre- and post-tests should report "don't know" answers separately, by gender. That would show whether instruction builds confidence as well as knowledge.

Minnesota's personal finance graduation requirement

Minnesota Statutes, section 120B.024, requires students entering grade 9 in the 2024–25 school year or later to complete a personal finance course. The first students covered are the class of 2028. In our data, people who took a financial education course were 12 percentage points more likely to answer all three questions correctly. That is an association, not a measured effect of the course. Building "don't know" measures into evaluations from the start would show whether the requirement narrows the confidence gap as well as the knowledge gap.

3. Build confidence, especially among young women

About half of Minnesota women gave at least one "don't know" answer at every age, while men and women who gave the same kind of answers rated their knowledge the same. Courses, coaching, and campus programs can give students practice in applying what they know. Young men show a different risk: answering without "don't know" and getting the question wrong.

4. Advise students on field of study and career path

Early-career pay differs far more by field and occupation than by technology access. Computing and engineering programs pay well in year 3 but produce about 12% of graduates. Raises in the first years are similar across fields, at about 7%. For early-career pay, the data point to field of study and occupation, not digital access, as the topics for career advising.

5. Track the class of 2028

Future NFCS waves will include Minnesotans who completed the new personal finance requirement. Comparing their "don't know" and correct-answer rates with earlier cohorts, by gender, would offer a statewide check on whether the gaps narrow after the requirement.

Data and Methods

American Community Survey (ACS)

We use the 2021 ACS 1-year Public Use Microdata Sample for Minnesota (56,636 person records). All estimates use the Census Bureau's person weights, and standard errors use its 80 replicate weights. The graduate sample is Minnesota residents whose highest degree is a bachelor's degree, aged 24 to 27, with positive wages and usual weekly hours (719 bachelor's holders, 673 workers). The ACS has no graduation year, so we chose the ages at which the 2019 GEO cohort is concentrated in 2021. Internet and device items describe the household. Hourly wage is annual wages divided by usual weekly hours times weeks worked. The pay models control for age, hours, high-speed broadband, field of degree, industry, sex, race, marital status, and migration; a second version adds computer and engineering occupations. Percent differences are 100 × (e^b − 1).

National Financial Capability Study (NFCS)

The FINRA Investor Education Foundation's 2021 State-by-State Survey includes 500 Minnesota adults. It was completed online from June to October 2021 by members of online panels selected by quota, not by random sampling. We use FINRA's state weight, which matches the sample to the ACS on age by gender, ethnicity, and education. Descriptive results use all 500 respondents. The models use the 430 respondents with complete answers on every predictor (429 for the three-way outcome); nothing is imputed. The young-adult subset (ages 18 to 34) has 115 respondents in the model sample and 149 among all respondents. We estimate weighted logistic and multinomial logistic regressions and report average percentage-point differences. A random forest, a machine-learning method, serves as a check on which predictors matter most. Because the survey is a non-probability panel without design variables, significance tests are approximate, and small cells are reported only descriptively.

Graduate Employment Outcomes (GEO)

DEED builds GEO from Minnesota graduation records linked to Minnesota unemployment-insurance wage records. We use the July 2018 to June 2019 bachelor's cohort, downloaded October 7, 2026: 32,848 graduates, of whom 20,253 (61.7%) had reported wages in the first three months of year 3. The statewide median of $30.63 is DEED's published all-programs figure (33,082 graduates, 20,311 with year-3 wages), which differs slightly from the sum of program rows. GEO does not cover federal, self-employed, or out-of-state jobs. GEO publishes medians without standard errors, so GEO results are descriptive.

Open question on GEO wages

DEED has not yet confirmed the CPI base year or the low-wage floor used in GEO. The data tool's glossary states that hourly rates below $6 are excluded and that wages are expressed in constant dollars "using the most current CPI index," without naming the base year. An older glossary lists a $4.90 floor. We report DEED's medians as published and do not adjust them. For this reason the ACS–GEO comparison is approximate. Confirmation from DEED is pending.

Calculations added for this report

Most numbers come from the authors' working paper and its online appendix. The online appendix is available upon request. Two sets were recomputed for this report from the same local data files: (1) NFCS digital channel use by age group (Figure 4 and the 70.2%, 46.4%, and 21.1% shares of respondents using 3 or 4 channels), on the working paper's model sample; and (2) ACS household internet status by age group (Figure 2) and the smallest segments of Figure 3. The all-ages and 22–64 totals match the working paper exactly. The 33% and 2% computing premiums in Figure 14 are conversions of published coefficients.

Limitations

All results are associations from one state and one year. Digital finance use, savings, and financial knowledge may influence one another, and unmeasured traits may drive them all. The NFCS is an online panel whose members are all internet users. The ACS and GEO describe similar populations of graduates, not the same people. The ACS computing and finance groups are small (25 computing majors and 54 finance-industry workers).

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