

# **LOUISVILLE/SKILLS**

**An Evaluation of the Humana Foundation-funded Partnership  
between Interapt, University of Louisville, and General Assembly**

**David Johnson, PhD, MPH**

**Allison Smith, PhD**

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## Introduction

In the spring of 2019, a collaborative effort to provide coding education to residents of an underserved area of Louisville began. Interapt, a Louisville-based software and digital workforce development company, secured a \$325,000 grant from the Humana Foundation to conduct a Software Engineering Immersive (SEI) training for residents of west Louisville. Interapt has conducted many of its own trainings, but for this cohort the company contracted training from General Assembly, a national leader in software engineering and coding skills development. Interapt partnered with the University of Louisville, which acted as the fiscal sponsor and key community stakeholder and offered strategic and logistical support throughout the project.

This dynamic partnership of local and national stakeholders was formed for the sole purpose of providing coding education to 25 individuals – with intent to improve their education, economic situation and career prospects, as well as their financial, physical, and emotional well-being. The following report is an objective evaluation of the impact of this project, known as the Louisville/Skills partnership.

## Background

Software development and coding skills are undoubtedly in high demand for the 21<sup>st</sup> century workforce and the future technological needs of employers (World Economic Forum Future of Jobs Report, 2018). The technology industry is the fastest-growing job classification in Louisville/Jefferson County, with 1,915 tech companies currently operating (GLI 2019). In the greater Louisville region (Jefferson, Bullitt, Henry, Oldham, Shelby and Spencer counties in Kentucky and Clark, Floyd, Harrison and Washington counties in Indiana), traditional “high tech” firms as well as firms that employ a significant share of tech workers, regardless of industry, employed 142,000 people and provided \$33 billion in total economic impact, according to a 2019 report (Louisville Business First, 2019).

While the need for people with these skills continues to grow, communities with the highest unemployment rates seldom qualify for these positions. In west Louisville, where unemployment (pre-COVID) was more than twice that of the rest of Jefferson County (American Community Survey, 2017), an increase in software development and coding jobs in Louisville has not resulted in increased employment opportunities for west Louisville residents.

In addition to implicit bias in the tech field (as in all industries), lower-than-average education levels are often the attributed reason for the mismatch between black job seekers and the job openings for coding professionals. However, the skills needed to enter software development are not dependent on higher levels of education. Immersive bootcamps and other job training programs can provide the needed skills for an entry-level coding position. However, as this evaluation shows, the reasons for the mismatch are more about essential needs such as housing, transportation, access to healthcare and wellbeing facilities, and childcare. Any effort to reduce the inequities in this economic landscape will need to include consideration of essential needs.

Recruitment for this training project was targeted to west Louisville, where the median household income is \$27,140, the non-white population is 85.0%, 55% have a high school equivalent or less, and unemployment is 13.0%. In west Louisville, 50.7% of workers are employed in the service industry (ESRI Community Profile, 2019). West Louisville also has the lowest car ownership rate in Jefferson County,

and residents there disproportionately rely on public transit. Thus, specific challenges around transportation, housing security, access to healthcare, and adequate childcare often factor in to probability of success in any job training initiative.

## Methods

The evaluation of this initiative was conducted using a mixed methods approach. The quantitative instrument was developed using established measures of quality of life, as well as the Consumer Financial Protection Bureau (CFPB) Financial Wellbeing instrument. Survey data were collected at the beginning of the cohort experience and toward the end, in a pre-post testing methodology. Instruments differed to eliminate redundancy (e.g. duplicate demographic information) and include space for summative and open-ended questions in the post survey. Qualitative data were collected via participant observation, whereby the researcher spent time on site taking field notes and interacting with cohort participants, which included both students and instructors. In all, more than 30 hours were spent on-site during the 12 weeks of the SEI. In addition to observations and informal discussions, interviews were conducted with both selected students and instructors.

## Results

These results reflect both the quantitative and qualitative data collected during the process.

### Cohort Recruitment

The cohort group was finalized and established in August 2019. In total, the initiative received 329 applications, of which 176 were fully completed. Interapt sent this list of applicants to General Assembly for the interview process. Interviews were conducted via phone and included questions related to a variety of categories, including family, housing, finances, work/residency, education, transportation, and communication. As per protocol, GA did “not record detailed notes” from this process, and information related to age, race, and education were voluntarily disclosed by applicants. After considering applicant pre-work scores, 42 interviews were conducted, and the final 25 students were selected for the cohort (with an additional five on the waitlist.)

The goal for this initiative was to recruit and train 25 total individuals. Out of this selected group, 20 completed the training and graduated. The other five did not complete for these various reasons: the administrators were unable to contact one person prior to the launch event; one person came to the launch event but did not participate afterward; the other three began the training and dropped out at various stages. One dropped out after one month due to medical reasons, and another dropped for unknown reasons and was unreachable thereafter. The final student withdrew from the cohort in early November due to personal reasons and difficulty with the material.

The goal of the initiative was to target individuals from the west end neighborhoods of Louisville, and as part of this cohort, 12 of the 23 individuals met this criterion at the beginning of the cohort, and 11 of the 20 cohort graduates met this criterion. This information was self-reported by participants that they either currently or formerly lived in west Louisville neighborhoods.

### Cohort Demographic Information

**Average age** of the cohort was 32.7 years old, with ages ranging from 18 to 60 years old.

There were 15 total **dependents** under the care of cohort participants, ages ranging from 2 to 30 years old.

### Race/Ethnicity

Self-Identified Race and Ethnicity		
	Count	Valid Percent
Black/AA	10	43.5
Indian	1	4.3
South Asian	1	4.3
Undisclosed	1	4.3
White	9	39.1
White/AA	1	4.3
Total	23	100.0

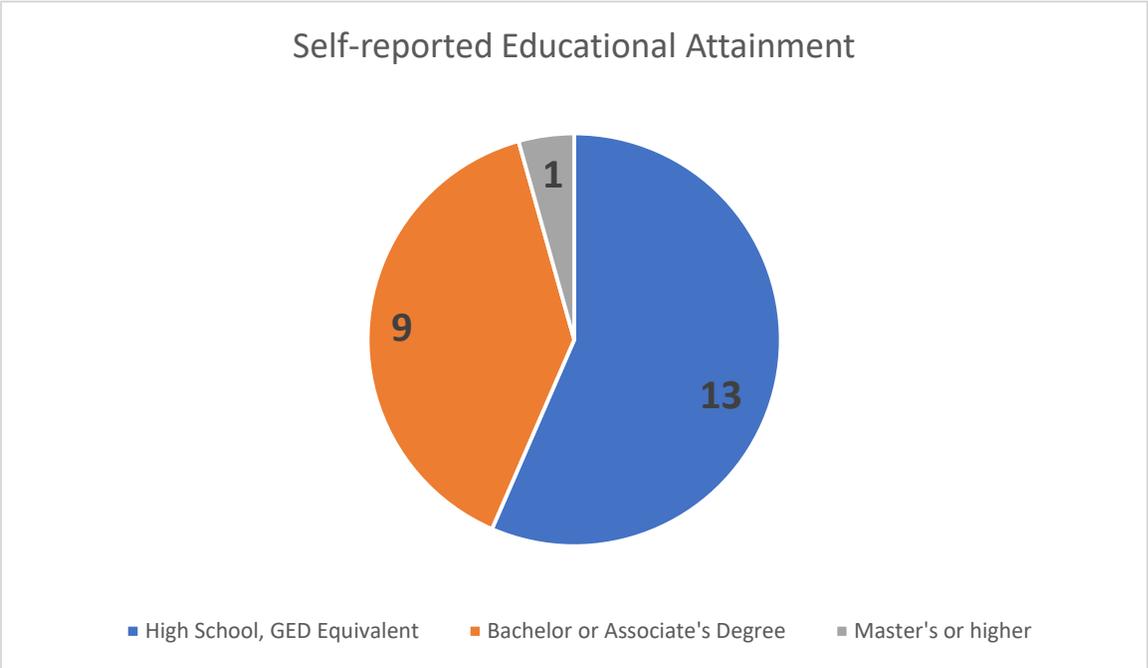
### Individual Income

Self-reported Individual Income		
	Count	Valid Percent
\$14k or less	16	69.6
\$15k to \$24k	2	8.7
\$25k to \$35k	2	8.7
\$36k to \$49k	3	13.0
Total	23	100.0

### Household Income

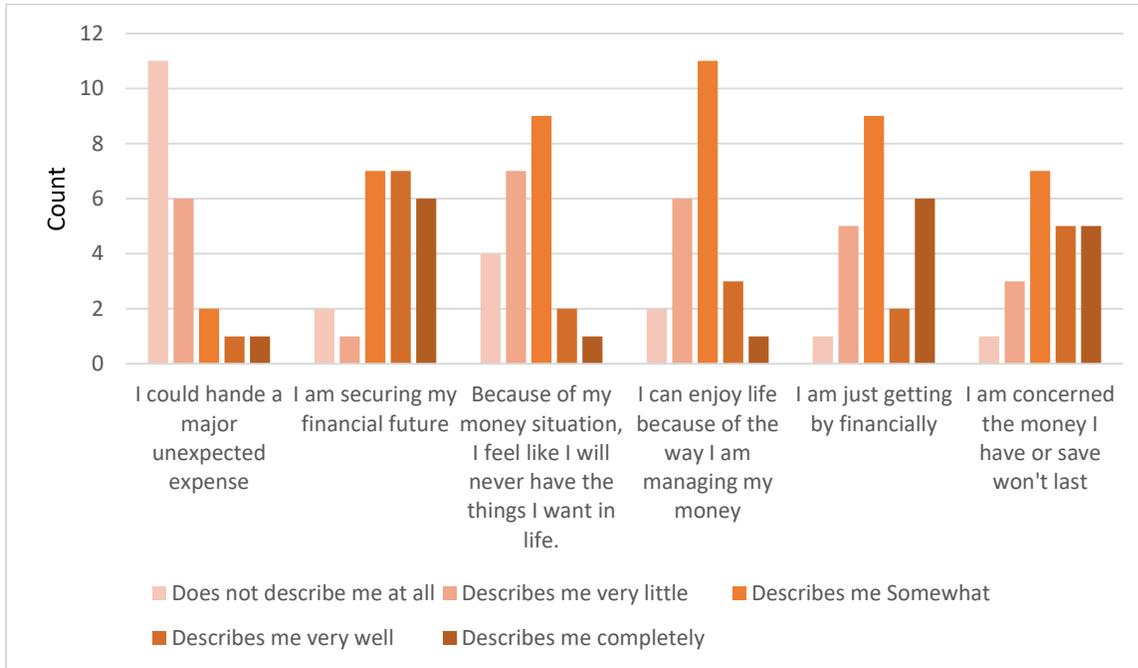
Self-reported Household Income		
	Count	Valid Percent
\$14k or less	11	47.8
\$15k to \$24k	5	21.7
\$25k to \$35k	2	8.7
\$36k to \$49k	2	8.7
More than \$50k	2	8.7
Total	22	95.7
Missing	1	4.3

**Education**

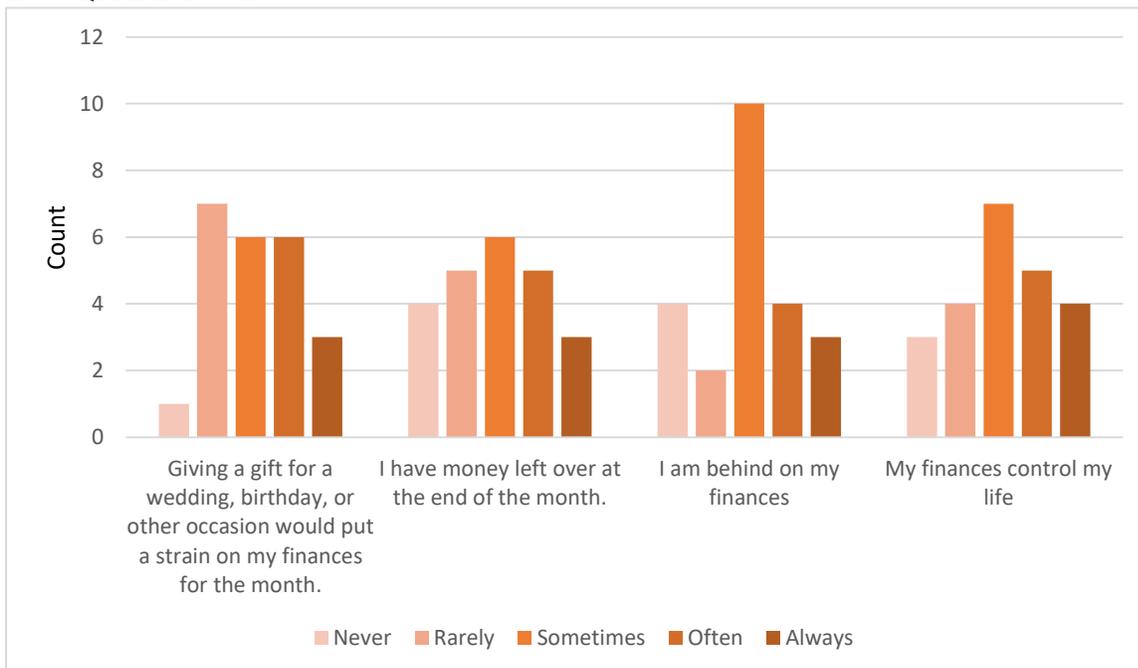


## Cohort Financial Wellbeing and Quality of Life Information (pre-test)

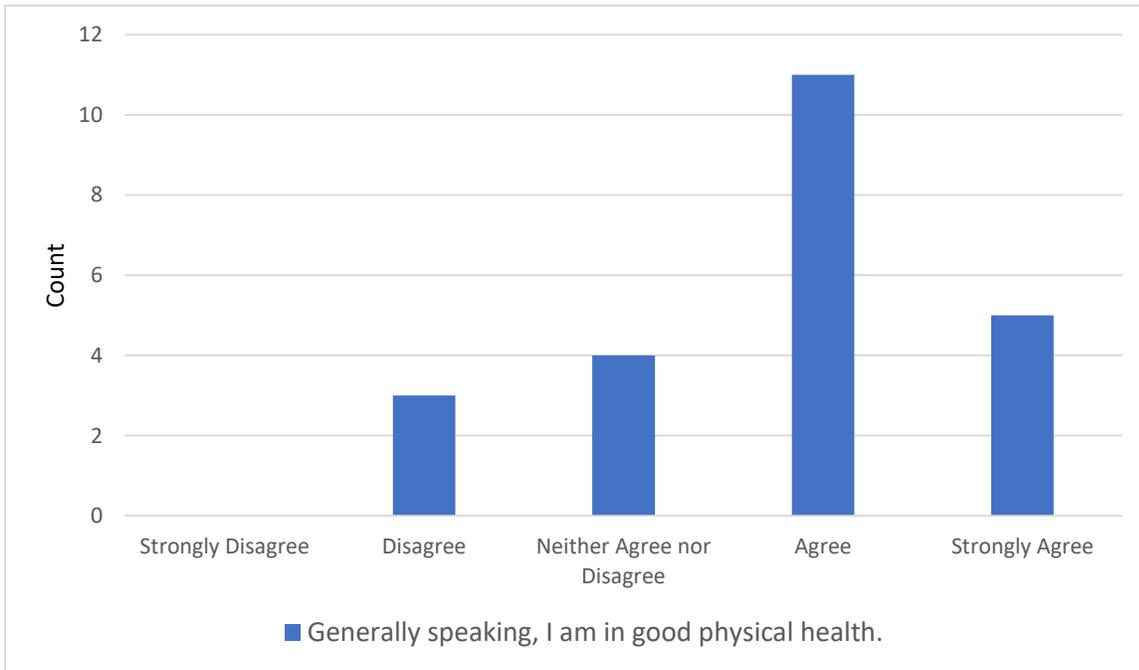
### CFPB Questions 1-6



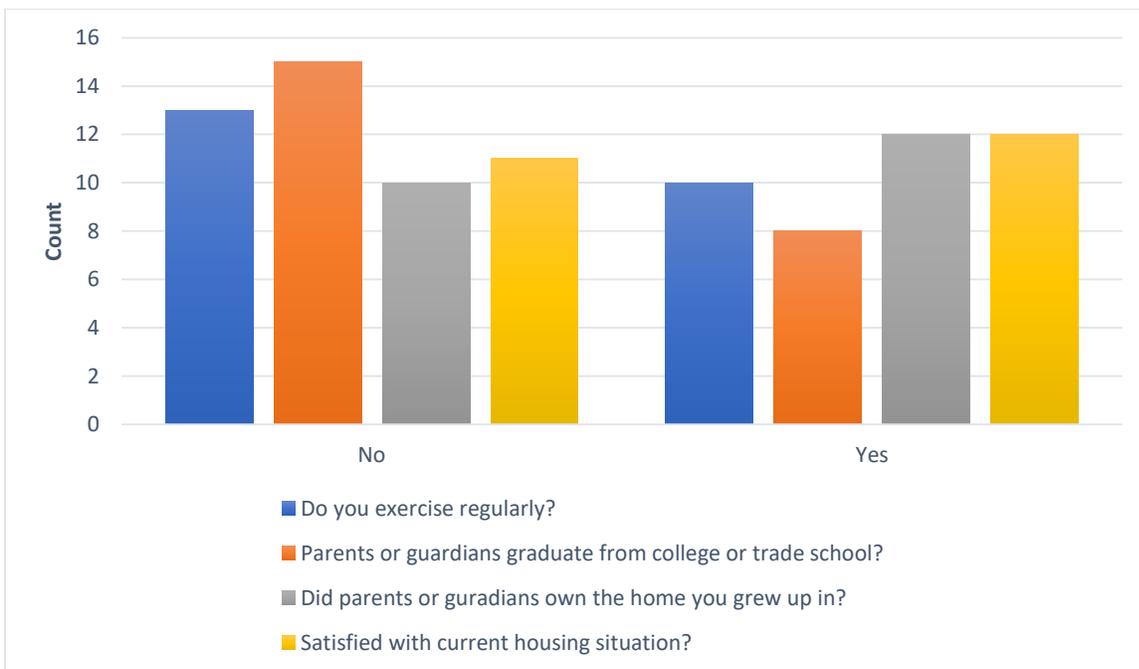
### CFPB Questions 7-10



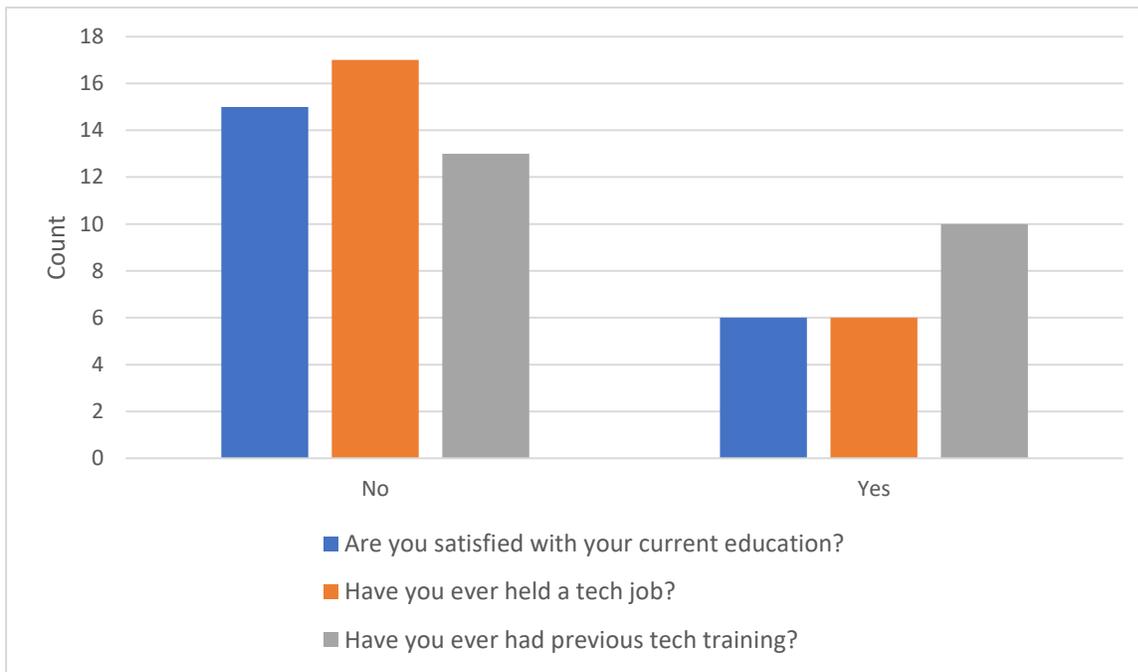
### Self-Reported Physical Health



### Quality-of-Life Specific Indicators



### Education Satisfaction, Previous Tech Work Experience and Training



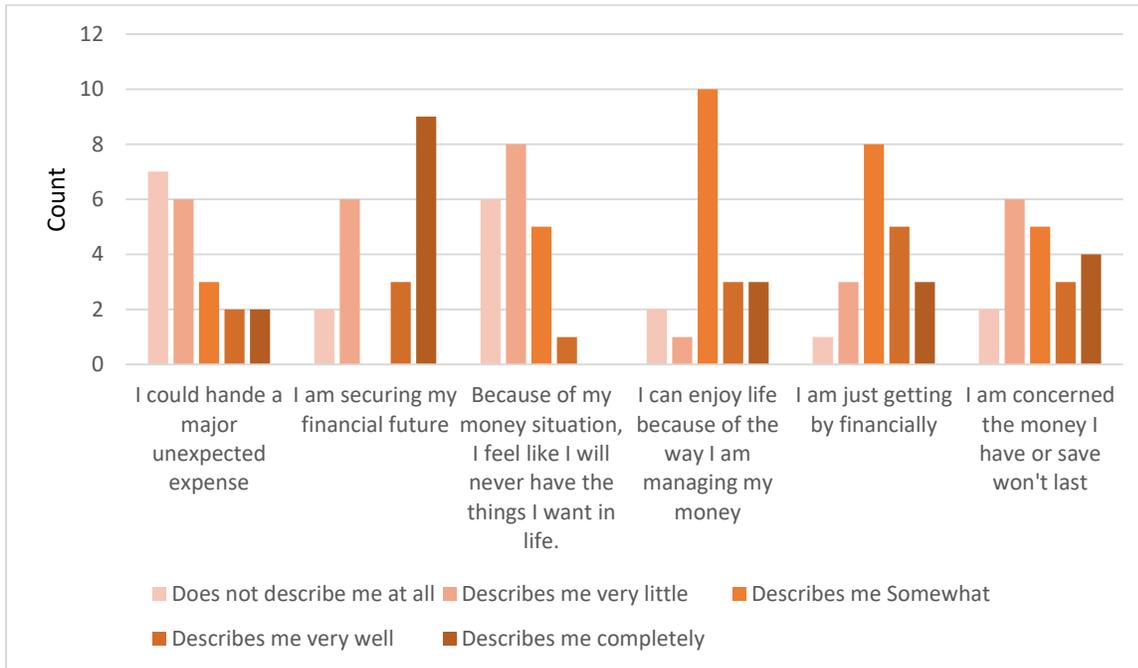
On a scale of 1 to 10, the average *self-identified level of tech expertise* prior to the training was **3.92**.

### Employment Security

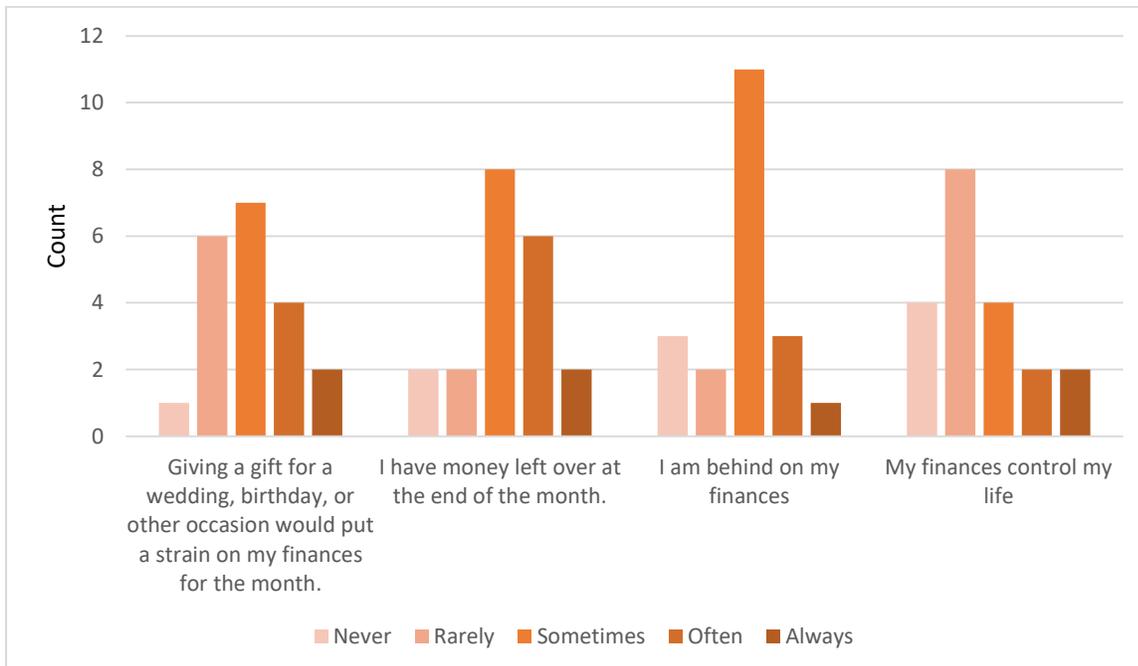
Number of jobs held in the past 3 years		
	Count	Percent
0	3	13.0
1	7	30.4
2	5	21.7
3	3	13.0
4	2	8.7
5	2	8.7
6	1	4.3
Total	23	100.0

## Cohort Financial Wellbeing and Quality of Life Information (post-test)

### Post-test, CFPB Questions 1-6



### Post-test, CFPB Questions 7-10



### Difference in responses between pre and post tests for CFPB Questions

Note: Number of fewer responses (negative number), more responses (positive number), or no change (zero) for each response option for each question

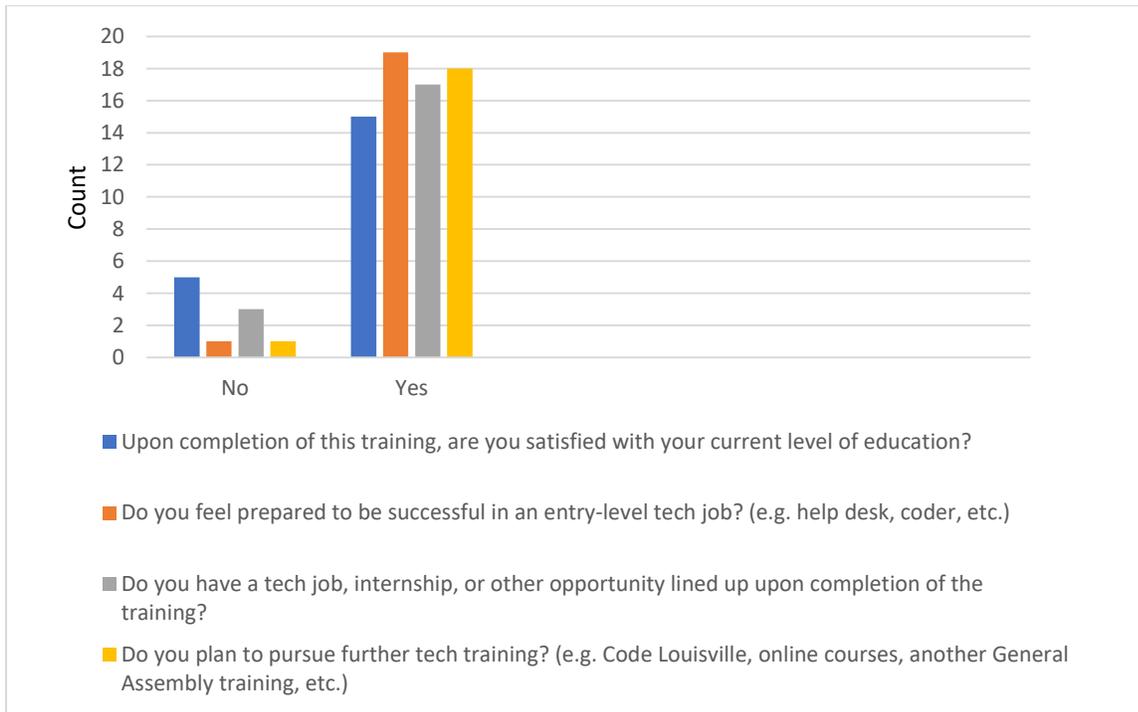
<b>Pre-post differences in CFPB Questions 1-6</b>					
	Does not describe me at all	Describes me very little	Describes me Somewhat	Describes me very well	Describes me completely
I could handle a major unexpected expense	-4	0	1	1	1
I am securing my financial future	0	5	-7	-4	3
Because of my money situation, I feel like I will never have the things I want in life.	2	1	-4	-1	-1
I can enjoy life because of the way I am managing my money	0	-5	-1	0	2
I am just getting by financially	0	-2	-1	3	-3
I am concerned the money I have or save won't last	1	3	-2	-2	-1

<b>Pre-post differences in CFPB Questions 7-10</b>					
	Never	Rarely	Sometimes	Often	Always
Giving a gift for a wedding, birthday, or other occasion would put a strain on my finances for the month.	0	-1	1	-2	-1
I have money left over at the end of the month.	-2	-3	2	1	-1
I am behind on my finances	-1	0	1	-1	-2
My finances control my life	1	4	-3	-3	-2

## Measures of Satisfaction



## Measures of Satisfaction (cont.) and Plans



On a scale of 1 to 10, the average *self-identified level of tech expertise* **after** the training was **5.91**.

## Reflection Responses

### 1. What was your favorite thing(s) about this training experience (provide some details, please)?

All of it! I got to build stuff & break stuff. Being able to see something I built has been priceless!!

Everything

I have a better job & financially assured

I love to learn, so everyday here learning and having fun while doing it is my favorite part. Marc is one of my favorite teachers I've ever had in life.

I loved getting to know my class and instructors. I always felt encouraged & supported.

I really enjoyed the classroom instruction (as opposed to online instruction). The instructors were GREAT and made learning a new skill manageable.

It provides me with hope. 1 year apprenticeship with Humana.

Learn all new technologies like React, Nosql, Postgress, Mongoose. It is organized but lot more for the timespan.

Learning a new skill was the greatest thing about this class.

Marc is an amazing teacher and coder in general, and really lead the experience well. Also, the instructors, Rachel often, really cared if we were doing well and understanding the content.

My favorite part of this experience was the people. This was not an easy program but with the help, and encouragement of instructors and peers I made it.

My favorite thing about this training experience is the various styles of teaching.

The GA provided instructors (Marc, Mike) were fantastic and greatly contributed to my success in the program. When I had problems I had a multitude of friendly, helpful mentors to turn to. Meeting new & diverse people was awesome and I've made some great friends.

The instructors were knowledgeable and the students were motivated to succeed. I feel prepared for an entry-level developer role. I liked how we (went) over content several times, instructors were always willing to assist with problems.

The people were fun and everyone's teaching method was fun and relaxed.

### 2. What were some of your own biggest challenges to complete this training (provide some details, please)?

Dealing with housing and transportation. I am also a single mom of 2 small children. We were facing having to sleep in my car, which doesn't always run properly.

For me, getting comfortable with breaking code, debugging, and research. Also, the design aspect of development.

I often have trouble concentrating when I'm surrounded by a bunch of people and noise. This made me have to re-teach myself lessons at home a lot. The lack of quizzes/feedback on homework made me unsure of how well I was doing.

Javascript has been my biggest challenge in the class. Javascript is a foreign language that I had never attempted to master prior to this class.

Keeping up with the pace of the class. If you missed even 5 minutes it could take you an hour to catch up.

Learning new languages

Location was for me, personally. I do not understand why it was chosen, but it was not in my normal range. Amount of instructors/help during project weeks was a challenge sometimes, 2-4 for 20+ classmates is rough.

My biggest challenge has been my confidence. I often say "I'm not prepared" and "I don't know how," when in reality I'm capable, I need to apply myself more and have more confidence.

My confidence and how new I am to this skill a lot of resource that are out there you have to pay for certain features and that can be a draw back at times.

Not biggest challenges, but getting hands on for those technologies with in a short time comfortable with those takes me some more time to learn.

Public Speaking, being in groups with strangers at first only. Now I have come to have many friendships.

Staying calm and realizing I won't learn it all in these 3 months and it's okay to not know as long as you find the answer.

Supporting myself and making it to the next day. I have little to no money and my past makes it hard for me to move through the city.

Syntax and remembering the format of the code.

The biggest challenge was trying to learn all of the information. This was a very fast paced program, as I expected so I didn't stress too much if I didn't grasp everything.

The pace of the course was very fast and it was challenging to keep up with new material.

While the stipend helped, it could've been larger so I wasn't so stressed about money. Some lessons were presented poorly. Some technologies taught aren't too relevant to the Louisville tech scene. Little help for reaching out to non-partner companies for jobs.

**3. What are some things that could be improved upon for the next time a training like this is offered (provide some details, please)?**

A higher pay every-week

A location without a coded locked door, or give students the code :)

Add in some quizzes/tests so people can have an idea of where they need to improve. Obviously testing isn't the greatest way to measure someone's ability, but it gives an idea when done on occasion.

Consistent work, more opportunity to focus on our strengths and weaknesses if we choose.

Cover less material, but more thoroughly. Go slower.

During pre-work there was a digital book. It would be great to add a book or at least hard copies to study.

I think some supplemental instruction material would pair really well with this course. As it is now, we have to find our own supplemental instruction (i.e. YouTube videos, books, etc.)

Lesson plans and time management

Maybe make a couple weeks longer

More future job-related support via local startups. Using only GA instructors with ample teaching experience.

Paper handouts, homework with detailed instructions, and slowing the program down just a little. As well as progress reports.

Please do not cover so much material so fast.

Subject reading/training references. Study material could help.

The program itself was great, but at times mainly during project week the ratio of instructors to students was tough. It would be nice if Interapt Developers or other volunteers could come by and support.

Timespan - the technologies getting to be introduced.

Warmer room in colder months, lol... but no it was awesome. Maybe more reviews instead of moving on so fast but I understand it's immersive.

When learning new material, a day of introductory lectures that are conceptual in nature and that include visual aids would be helpful. Sometimes we would dive into the code without knowing what's happening behind the scenes.

**4. Is there anything we forgot to ask, or any other information you would like to offer that might help the evaluation of this training?**

I think the program should be longer with shorter days. Compiling break times into longer breaks would also be fine or using compiled time for review.

If future trainings take place, consider an improved access to the building. Getting accustomed to how we were to be allowed into the building and where we could and could not go seemed challenging in the beginning and throughout.

Keep the instructors they are amazing!!

Nothing much. It was a very good opportunity for everyone to learn and upskill our knowledge. I am happy to be part of this program.

This program was/is AMAZING. I would have never thought I would be coding anything. This opportunity has helped change my life.

### Qualitative Summary of Observations

Overall, the SEI experience was well organized with several milestones along the way. The initial launch event brought everyone together for the first time during orientation. It was here that students received a new, loaned MacBook Pro for use during the cohort. During orientation, they heard from representatives from Interapt, General Assembly, University of Louisville, the Louisville Urban League, and project evaluators – it was here that they completed the initial survey. Several weeks later, a press event was held in which leaders from UofL, General Assembly, and Interapt spoke about the initiative. This event included remarks from university President Neeli Bendapudi, General Assembly CEO Jake Schwartz, and Interapt CEO Ankur Gopal. In the audience were members of the press, the community, and stakeholders from Humana and General Electric – local companies that had agreed to host graduates for apprenticeships upon graduation. In talking with students at this event, they noted that the SEI experience was going well so far – overwhelming at times in the amount of content and the pace, but by working together they were overcoming challenges.

In addition to these events, the SEI was organized around four modules with projects and presentations at the end of each one. These were sometimes individual projects and sometimes team based. It was clear from observing project two, an individual project in which students developed an app, that there was a wide variety of interests, creativity, and specific areas of expertise developing within the students. For instance, a student with a graphics design background had produced a very sleek, aesthetically pleasing app. Researchers were given access to the Interapt tracking system for the cohort – which included everything from individual assignment scores, tracked visits to office hours, and counts and dates of student absences and late arrivals. In observing the project presentations, it was clear that even to an external observer, the scores seemed to be aligned with project deliverables.

Students were afforded a \$100 per week stipend throughout the cohort, in the form of cash dispensed each Friday. While this is not a lot of money given the hours spent each week in the classroom, it served as both support and incentive to students. For some, this was much more than they had been receiving, as several of the students had been previously unemployed.

Over the course of the cohort, it was noted that several of the students experienced significant life challenges that affected their performance and ability to continue with the SEI. At least three students began the experience as housing insecure. One student had vision problems and could not see the screen, and officials from Interapt personally took the student to an optometrist and paid for corrective eyewear. Another student experienced car issues and needed a repair that they could not afford in order to maintain reliable transportation to the SEI site – again, this was covered by officials from Interapt. Many other students also experienced transportation insecurity, and an agreement with the Transit Authority of River City (TARC) was established in November to provide bus passes for eight total students. Throughout the SEI, certain students struggled with childcare and were late or absent as a

result. Both Interapt officials and GA instructors noted that they had loosened the attendance and tardiness requirements to afford these individuals more flexibility.

Toward the end of the cohort experience in early December, Interapt officials coordinated a Hack-athon for the students and the campus community, many of whom participated on a voluntary basis as this was not a required event. Held in the University of Louisville Engineering Garage, this opportunity exposed students to real world data from a presentation by Louisville Metro Government's Chief Data Officer Michael Schnuerle. Students then worked in small teams to leverage available data to create an application, having only one day to complete it. Student efforts were presented and judged by local tech community stakeholders and received both feedback and a prize for their participation.

This researcher observed students working together over the months and forming social bonds of collegiality and friendship. The classroom space was in the Center for Archeological and Cultural Heritage (CACHe) Building in west Louisville, and it provided adequate space for the most part, but there were some limitations and challenges. The HVAC system could be loud and made it difficult to hear at times, and on particularly cold days, the classroom itself was chilly. Students had access to only a few areas of the building and did not have access to the exterior door code, and additional office space was not provided to instructors. The building is located in a part of town that does not have many nearby healthy food options, which was also a challenge. On several occasions, both Interapt officials and instructors paid out of pocket for pizza, or some other food for everyone.

Toward the end of the SEI experience on December 18<sup>th</sup>, students received an offer letter that identified their apprenticeship placement, salary, and job title – with various positions at Humana, General Electric, and Interapt. All 20 cohort graduates received an apprenticeship offer, with an average and annualized salary of \$36,700 (average starting salary of \$34,000, with successive pay increases over the year to end at a \$40,000.)

## Discussion

The Louisville/Skills partnership provided a unique opportunity for the 20 individuals who finished the SEI experience and training. Data indicate that this selected cohort largely met the demographic criteria intended for the program – more than 50% of participants had a high school diploma or GED equivalent only; more than half were or are residents of west Louisville neighborhoods; more than half were employment insecure – being unemployed or having 3 or more jobs in the past three years. Cohort participants also initially indicated high levels of financial insecurity, in that 17 of 23 respondents reported that they could not handle a major financial expense.

Comparing the pre and post survey results, modest improvements to both self-reported financial well-being and quality of life measures are evidenced. However, due to the short time between the surveys, it may be the case that respondents were merely *anticipating* improvements rather than currently experiencing them. Some of the CFPB questions in the initial survey, such as “I am securing my financial future” may have been skewed in this way as well. Analogous measures of quality of life can be derived from the CFPB questions, including indicators for stress, financial independence, satisfaction, and control over one's own life (Cesnales 2014). By all accounts, these indicators improved for respondents, but the issue of survey timing and anticipation remain.

From an economic perspective, the program appears to be successful in specific examples. Using tax calculation information from SmartAsset.com, it is estimated that each individual on average increased their contributions to the tax base (federal, state, and local), by more than \$6,000 per year, and the cohort increased its contributions by \$123,160 in total. This calculation considers the average salaries at the beginning and end of the cohort (\$14k and 38K, respectively). The increased contribution to the tax base alone means that the total grant funding allocation of \$325,000 is offset in 2.64 years.

Economic Impact of Increased Salary (2019 estimate, Louisville, KY, Filed Single, 1 Exemption)		
	Individual	Cohort (x20 individuals)
Average Cohort <b>Starting</b> Salary*	14,082	
Federal Tax Contributions	188	3,760
FICA Tax Contributions	1,077	21,540
State Tax Contributions	575	11,500
Local Tax Contributions	310	6,200
Total Income Taxes	2,150	43,000
Average Cohort <b>Ending</b> Salary**	37,600	
Federal Tax Contributions	2,854	57,080
FICA Tax Contributions	2,876	57,520
State Tax Contributions	1,751	35,020
Local Tax Contributions	827	16,540
Total Income Taxes	8,308	166,160
Average Cohort Salary <b>Difference</b>	23,518	
Federal Tax Contributions	2,666	53,320
FICA Tax Contributions	1,799	35,980
State Tax Contributions	1,176	23,520
Local Tax Contributions	517	10,340
Total Income Taxes	6,158	123,160

\* Average includes 8 participants as unemployed, confirmed by Interapt

\*\* Averaged and annualized post-graduation salaries, includes apprenticeships and successful job attainment

Considering changes to Medicaid and uninsured status, even more savings are realized. Within the cohort, this applied to 12 of the 20 individuals. By transitioning these individuals to private insurance, an additional \$68,000 is saved annually to both the state-funded Medicaid and in uncompensated care to the health system.

Economic Impact of Changed Insurance Status		
	Individual	Cohort
Medicaid per Year*	7,279	58,232
Uninsured Per Year*	2,443	9,772
Total Annual Costs to State, Health System	9,722	68,004

\* Cohort Information: 8 with Medicaid, 4 uninsured (confirmed by Interapt); Medicaid costs per person per year (2017, KY): \$7,279; uninsured costs per person per year (2017, US): \$2,443

When both increased taxes and change in coverage are considered, the total annual net benefit is \$191,164 annually. This would offset the grant funding allocation of \$325,000 in 1.7 years. These estimates are intentionally conservative, and do not account for the second-year average salary of \$40,000 or more post apprenticeship.

Feedback from cohort participants indicated that compared to other local coding education opportunities, such as Code Louisville, the Louisville/Skills SEI was more in depth, though much faster paced. It was also more personal and utilized a smaller cohort – which afforded more in-person time with instructors.

Based upon feedback from instructors, compared to other SEI trainings that GA has conducted, the demographic and experience of this cohort differed in several ways. First, there were individuals within the cohort much younger than typical SEI participants, and instructors had not worked with so many 18 and 19-year-olds in one group prior to this experience. Instructors also noted that there were many more outside life-related issues with these individuals compared to other SEI participants, but along those same lines, there was “greater opportunity to change people’s lives” than other cohorts. It was also noted that GA does not guarantee employment after SEI completion, and the fact that all the Louisville/Skills SEI participants had an apprenticeship or other salaried position lined up upon graduation of the program was unique. Lastly, instructors praised the fact that all cohort participants had the opportunity to use the same computer – a loaned Apple MacBook Pro. This, again, was unique to the Louisville/Skills SEI, and noted this was incredibly valuable, and facilitated their ability to teach the content more consistently and efficiently.

There is evidence of overwhelming satisfaction for the program, as well as genuine appreciation for it and future opportunities that it provides.

## Conclusion

Based upon the results of the program, observations, and feedback from the participants, the initiative was successful on several measures. The number one indicator of immediate and future success of these and other coding bootcamp participants is employment, and all participants of the Louisville/Skills partnership were employed upon graduating from the SEI, by either an arranged apprenticeship or having acquired a salaried position themselves. This is a credit both to Interapt and to the University of Louisville for developing strategic partnerships with GE and Humana to match and place participants in apprenticeships. Employment of this cohort will need to be followed, as continued assessment will determine the long-term financial and economic impact of the program, as well as how these increased employment opportunities have impacted quality of life for the participants and their families.

### [A note about COVID-19 and the future of work](#)

The COVID-19 pandemic has laid bare the stark inequities in our economy and healthcare systems which have resulted in a disproportionate number of people of color being affected, either by contracting COVID-19 or by losing their employment. Plans are now being mapped for the recovery from the pandemic as the economy slowly reopens. Kentucky’s unemployment rate after two months of shut-down sits at 15.4% (Courier-Journal, 2020), compared with 14.7% nationally. While this is far better than the anticipated rate of close to 33%, the effects are still staggering.

Tourism is ranked as the 3<sup>rd</sup> largest jobs sector in the state of Kentucky. Around 10% of working Louisvillians are in the leisure and hospitality industry, both of which suffered staggering losses during the COVID-19 pandemic. These industries often employ a disproportionate number of people of color, particularly African Americans from west Louisville. Therefore, the groups already in the most precarious financial positions were hardest hit by the economic shutdown starting in March 2020. While Louisville's economy made a distinct rebound after the 2008 recession, these gains were not evenly felt across the city. Residents of west Louisville did not see the same decrease in unemployment during the recovery as the rest of the county.

Even before the COVID-19 pandemic, Louisville recognized that tech jobs were more resilient to future economic disruptions than other industries. In June 2019, Louisville Metro entered a partnership with Microsoft to establish Louisville as a regional hub for AI, IoT, and data science with the announcement of the new AI Digital Alliance. This initiative is designed to build a tech talent pipeline and prepare Louisville's workforce for jobs in Information Technology such as web developer, network engineer, software programmer, data scientist, and IT security analyst. In April 2020, Louisville's mayor announced the "30-day Data Upskilling Challenge" to help boost the number of people in Louisville with data-economy skills during the Healthy at Home orders. Residents were given access to free self-paced, online data skills training. The courses included data analytics, digital marketing, software engineering, and user experience design. To increase participation, the initiative hosted a daily raffle of a laptop computer every weekday for four weeks beginning April 20.

Louisville's COVID-19 recovery plan, Building Back Better Together (BBBT), released on May 27, 2020, outlines a path for the city to rebuild its economy to be more resilient to the shocks and stresses of the future. Whether it's another pandemic or economic disruptions due to climate change, having resilient residents and systems will ensure economic prosperity for the city going forward. With a focus on equity, BBBT lays out key focus areas including Economy, Built and Natural Environment, Education and Talent Development, and Social Infrastructure and Impact.

## Executive Summary: Impact, Outcomes, and Recommendations

### Key Observations

- Education provided by General Assembly was excellent – Marc Wright, the lead instructor, is a phenomenal educator and worked well with the students.
- Students developed a strong sense of community as a result of the SEI experience.
- Cohort recruitment included individuals who may not have been ideal for the intent of the grant and/or intervention.
- Students' skills developed over the training, and from an objective observer's perspective, individual student scores seemed to align with quality of work (e.g. project two).
- Data show that students were overwhelmingly satisfied with the overall training experience.
- Data show that benefits of the coding bootcamp quickly surpass the costs.
  - Both in terms of increased contributions to the tax base as well as net savings to system (e.g. transitioning from Medicaid or uninsured status).
- Sample size (n=20) was insufficient to conduct significant inferential statistics and modeling analyses.
- Some positive changes were observed in data related to quality of life, but may be *anticipation of improved quality of life* as opposed to actual and/or immediate improvements.
- Instructors, Interapt staff, and loved ones of cohort participants took turns purchasing snacks and lunch for the students.
- There were several issues related to utilizing the Center for Archeological and Cultural Heritage (CACHE) Building as the instructional site: Very loud HVAC system, building/classroom could be cold in the winter months; students did not have door access which caused distress; students did not have access to other parts of the building nor did instructors have access to spaces other than the classroom and foyer to provide one-on-one instruction with students (no office access); building is located in a food desert with limited access to lunch and snack options; building is not located directly on a TARC bus route.

### Recommendations

- Incorporate more professional development trainings and opportunities throughout the process, and not simply at the end.
  - Workforce readiness in addition to coding education. Verbal communication skills (e.g. when discussing their code) may also be an issue with future cohorts drawing from this demographic.
- Emphasize and expand cohort pre-work – typing skills development, computer navigation and operating system literacy, etc.
- Interapt should assume/resume all responsibilities associated with cohort recruitment, including application seeking and vetting, interviewing, and final decision-making for cohort participants.
  - Interview, vetting, and cohort recruitment process by General Assembly was neither clear nor well-documented.
  - Consider administering the pre survey during the interview process and/or before acceptance into the program – this would mitigate bias and reduce data skewing. This would, however, make aggregating data from this cohort with future cohorts more difficult.

- Aggregate data from future cohorts to increase sample size and statistical power, which can be used for modeling and analysis.
  - Integrate existing Interapt tracking data on student outcomes to identify potential relationships with measures of financial wellbeing and quality of life.
- Consider the implications of providing coding education for this population from a broader social context.
  - Needs specific to those in low socioeconomic status (SES) categories will have unique challenges related to poverty, low educational level, and health considerations.
  - Transportation insecurity is prevalent with this population – any future education site chosen for SEI’s needs to have adequate public transportation access.
  - Housing insecurity and lack of adequate childcare may also impact success – an increased stipend would help meet these needs.
- Consider the benefit of having a dedicated social worker for each cohort as a case manager – to specifically work with one on one with each of the participants to identify needs and/or link them to appropriate social services.
- Consider higher per week stipends to help with basic needs.
- Consider setting aside a portion of funds that could be leveraged for an as-needed basis in cases of emergency (e.g. a participant needs glasses to see the screen, or needs a tire to maintain reliable transportation).
- Consider other locations for future education sites other than the CACHE
  - This could include other parts of UofL main campus, bringing students closer to the university and encourage future educational opportunities (e.g. earning certificates, badges, trainings, etc.)
  - Students expressed a desire to have a locker, cubby, or some private storage that would assist their daily commute
  - Considering implications of COVID-19, future education sites may need to leverage virtual learning environments, hybrid modalities, or utilize spaces suited to facilitate social distancing
- Food availability is another concern for future education sites, and ensuring that students have access to healthy food options should be a priority or included as a line item for future cohort budgets.
- Improved quality of life as the result of increased financial attainment takes time to establish; following cohort graduates throughout months and years after graduation will provide longitudinal insights and be invaluable for establishing efficacy of coding boot camps and similar initiatives.
- Incorporate a financial literacy component to the programming – higher wages alone may not address underlying issues of individuals – however, ensuring their ability to budget, save, and make the most of the new skills and employment opportunity is critical.

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# Appendix

## Pre-test Survey Instrument

Administered 09/27/2019

### Impact Evaluation Survey

This survey helps us understand more about the people participating in this training. Thank you for your participation, and we value your honest responses to the following questions:

#### PART A: Financial Well-being

*How well does this statement describe you or your situation?*

Does not describe me at all  
 Describes me at all  
 Describes me very little  
 Describes me somewhat  
 Describes me very well  
 Describes me completely

1. I could handle a major unexpected expense.	1	2	3	4	5
2. I am securing my financial future.	1	2	3	4	5
3. Because of my money situation, I feel like I will never have the things I want in life.	1	2	3	4	5
4. I can enjoy life because of the way I'm managing my money.	1	2	3	4	5
5. I am just getting by financially.	1	2	3	4	5
6. I am concerned that the money I have or will save won't last.	1	2	3	4	5

*How often does this statement apply to you?*

Never  
 Rarely  
 Sometimes  
 Often  
 Always

7. Giving a gift for a wedding, birthday or other occasion would put a strain on my finances for the month.	1	2	3	4	5
8. I have money left over at the end of the month.	1	2	3	4	5
9. I am behind with my finances.	1	2	3	4	5
10. My finances control my life.	1	2	3	4	5

**PART B: Quality of Life and Experience**

How well does this statement describe you or your situation?

Strongly Disagree    Disagree    Neither Agree or Disagree    Agree    Strongly Agree

11. I have a healthy relationship with my parents/guardians.	1	2	3	4	5
12. I am satisfied with my personal safety.	1	2	3	4	5
13. I am satisfied with the food that I eat.	1	2	3	4	5
14. I pursue at least one hobby.	1	2	3	4	5
15. I have time to spend with my friends and loved ones.	1	2	3	4	5
16. I feel like I have control over my own future.	1	2	3	4	5
17. I have access to a gym or outdoor space to be physically active.	1	2	3	4	5
18. Generally speaking, I am in good physical health.	1	2	3	4	5

Please answer 'yes' or 'no' to the following questions

No    Yes

19. Did your parents/guardians own the home you grew up in?	1	2
20. Did your primary parents/guardians graduate from college or a trade school?	1	2
19a. If yes, in the space provided, please indicate highest degree attained by each parent/guardian:		
21. Do you exercise regularly?	1	2
22. Are you satisfied with your current housing situation?	1	2
23. Do you have dependents? If so, please indicate how many and their ages in the space provided.	1	2
24. Are you satisfied with your current education?	1	2
25. Have you ever held a tech job? (e.g. help desk, coder, etc.)	1	2

26. Have you had any previous tech training? (e.g. Code Louisville, online course, General Assembly, etc.)	1	2
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27. On a scale of 1 to 10 (where 1 is 'none at all' and 10 is 'the highest possible'), please rate **your level of tech expertise** on the line here:

**Score:** \_\_\_\_\_

**PART C: DEMOGRAPHICS**

1. What is your name?
2. What **neighborhood** do you grow up in (e.g., Shawnee, Russell)? \_\_\_\_\_
3. What **neighborhood** do you currently live in (e.g., Shawnee, Russell)? \_\_\_\_\_
4. How do you identify your **race/ethnicity**? Please circle as many as you need.

White/Caucasian    Black/African American    Hispanic    East Asian    South Asian

Other (please describe) \_\_\_\_\_

5. What is your **age**? \_\_\_\_\_ years

6. **Gender**? Please circle one.

Female    Male    Other    Prefer to not answer

7. **Education level** (highest degree obtained to date)? Please mark one box with an **x**.

None (or less than 1 year)

Elementary school (or middle school/junior high school)

High school, GED (or equivalent)

Bachelor's or Associates Degree;

Master's Degree, PhD, MD, JD (or other higher professional degree)

If you have a college degree, please list your major/minor:

8. Which category best describes your current **individual income in the last 12 months**?

Please mark one box with an **x**.

\$14K or less    \$15 to \$24K    \$25 to \$35K    \$36 to \$49K    More than \$50K

9. Which category best describes your current **total annual household income**? Please mark one box with an **x**.

\$14K or less    \$15 to \$24K    \$25 to \$35K    \$36 to \$49K    More than \$50K

10. **Past work experience:** In the provided space, Please indicate the number of jobs you have held in the last 3 years:

**END!** Thank you! Please put your completed survey and pencil back into the folder.

### Impact Evaluation Survey

This survey helps us understand more about the people participating in this training. Thank you for your participation, and we value your honest responses to the following questions:

#### PART A: Demographics

11. What is your name?

\_\_\_\_\_

#### PART B: Financial Well-being

*How well does this statement describe you or your situation?*

*Does not describe me at all*  
*Describes me very little*  
*Describes me somewhat*  
*Describes me very well*  
*Describes me completely*

28. I could handle a major unexpected expense.	1	2	3	4	5
29. I am securing my financial future.	1	2	3	4	5
30. Because of my money situation, I feel like I will never have the things I want in life.	1	2	3	4	5
31. I can enjoy life because of the way I'm managing my money.	1	2	3	4	5
32. I am just getting by financially.	1	2	3	4	5
33. I am concerned that the money I have or will save won't last.	1	2	3	4	5

**How often does this statement apply to you?**

	Never	Rarely	Sometimes	Often	Always
<b>34.</b> Giving a gift for a wedding, birthday or other occasion would put a strain on my finances for the month.	1	2	3	4	5
<b>35.</b> I have money left over at the end of the month.	1	2	3	4	5
<b>36.</b> I am behind with my finances.	1	2	3	4	5
<b>37.</b> My finances control my life.	1	2	3	4	5

**PART C: Experience with the Training**

**How well does this statement describe you or your situation?**

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
<b>38.</b> I am satisfied with the quality of instruction for this training.	1	2	3	4	5
<b>39.</b> I found the location (part of town) this training was provided to be convenient.	1	2	3	4	5
<b>40.</b> I am satisfied with building space this training was provided.	1	2	3	4	5
<b>41.</b> I am satisfied with the amenities that were provided throughout this training.	1	2	3	4	5
<b>42.</b> This training has created new opportunities I would not have had otherwise.	1	2	3	4	5
<b>43.</b> Upon completion of this training, I feel like I have control over my own future.	1	2	3	4	5
<b>44.</b> Upon completion of this training, I feel prepared to enter the tech workforce.	1	2	3	4	5

Please answer 'yes' or 'no' to the following questions

	No	Yes
45. Upon completion of this training, are you satisfied with your current level of education?	1	2
46. Do you feel prepared to be successful in an entry-level tech job? (e.g. help desk, coder, etc.)	1	2
47. Do you have a tech job, internship, or other opportunity lined up upon completion of the training?	1	2
48. Do you plan to pursue further tech training? (e.g. Code Louisville, online courses, another General Assembly training, etc.)	1	2

49. On a scale of 1 to 10 (where 1 is 'none at all' and 10 is 'the highest possible'), please rate **your level of tech expertise** on the line here:

Score: \_\_\_\_\_

#### PART D: Reflection

1. What was your favorite thing(s) about this training experience (provide some details, please)?
2. What were some of your own biggest challenges to complete this training (provide some details, please)?
3. What are some things that could be improved upon for the next time a training like this is offered (provide some details, please)?
4. Is there anything we forgot to ask, or any other information you would like to offer that might help the evaluation of this training?

**END!** Thank you! Please put your completed survey and pencil back into the folder.