THE STATE OF THE

Digital Divide in Indiana

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January 2023

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Introduction

This analysis takes a detailed look at the digital divide as it was in 2021 (latest year available), who it affected, and its socioeconomic implications by using an innovative metric called the digital divide index. It should also increase awareness of this issue as communities and residents prepare to take advantage of the federal government's largest investment to-date in both broadband infrastructure and digital equity, components of the Infrastructure Investment and Jobs Act.

Data for this analysis came primarily from the U.S. Census Bureau 5-year American Community Survey. Additional sources include but are not limited to the Bureau of Economic Analysis, Lightcast (formerly known as Economic Modeling Specialists, Inc. or EMSI) and Venture Forward by GoDaddy. The unit of analyses were Census tracts and counties since some data was only available at the county-level (digital economy).

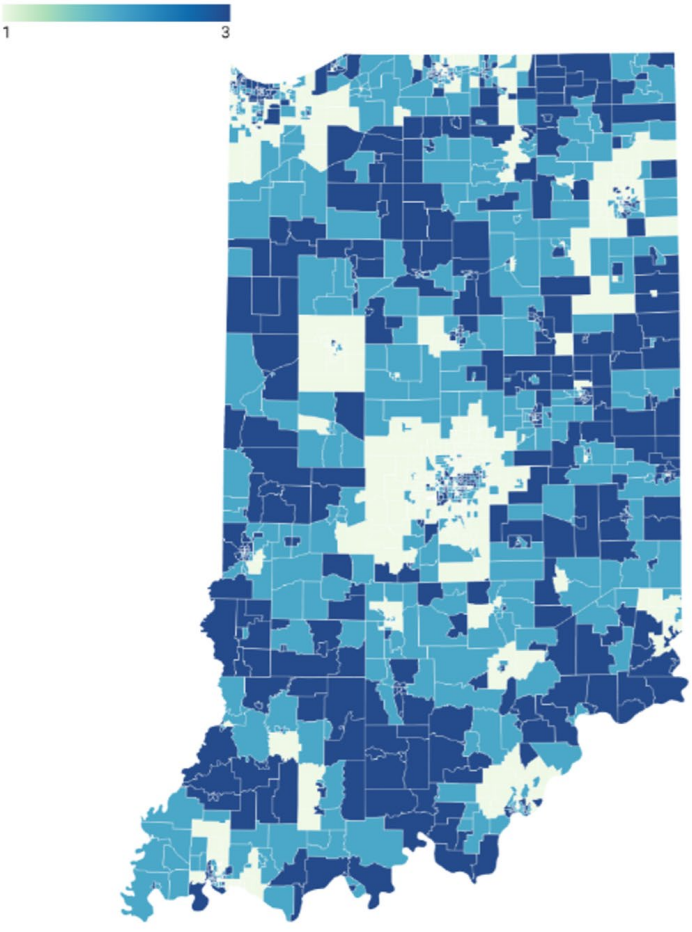
Digital Divide Index

The digital divide index (DDI) consists of three scores ranging from 0 (lowest divide) to 100 (highest divide) and includes ten variables grouped in two categories: infrastructure/ adoption and socioeconomic. For purposes of analysis, the overall DDI score was utilized. Tracts were divided into three groups (low, moderate, and high) of roughly 562 each for a total of 1,687 while counties were divided into three groups of roughly 30 counties each for a total of 92 counties based on their DDI scores.

Figure 1 shows a map of Indiana tracts by DDI groups (1=low, 2=moderate, 3=high). A darker color indicates a higher digital divide. The low and high groups were then utilized to analyze a host of other variables to better understand this issue.

Next, we look at a host of variables by the DDI group to better understand who it affected and its socioeconomic implications.

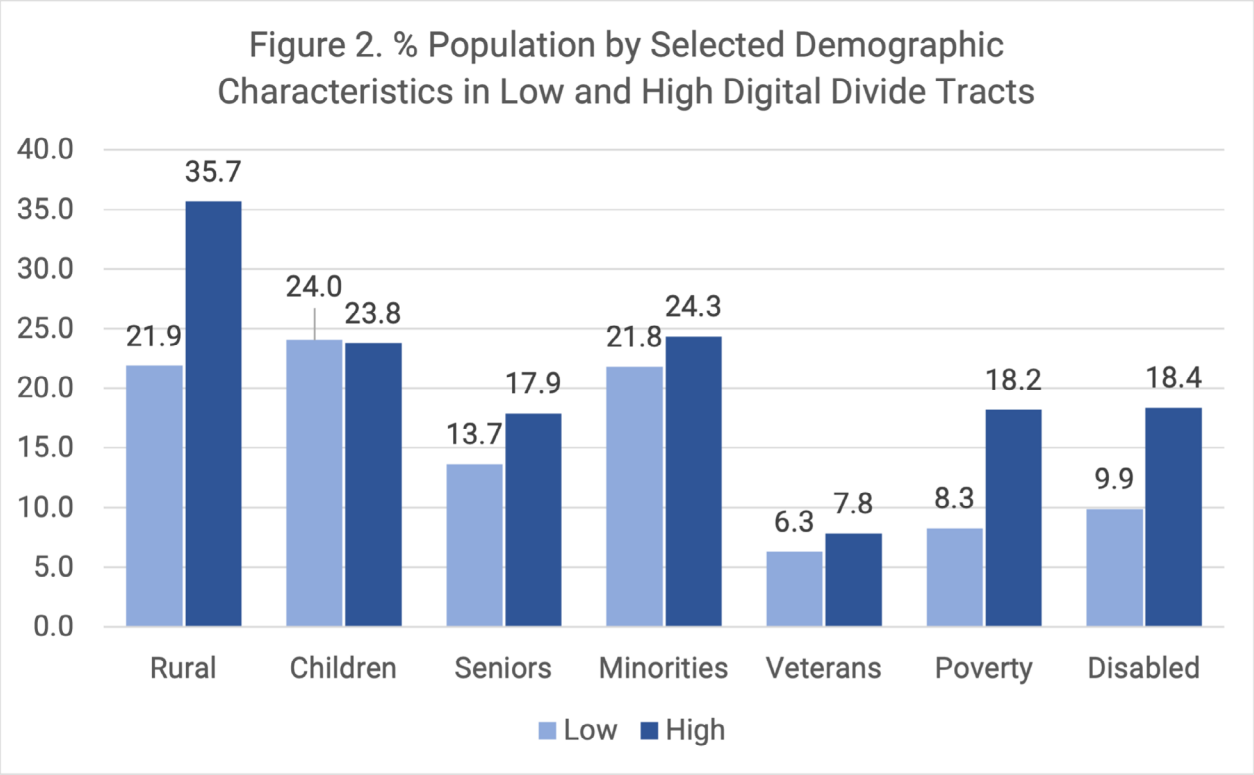
Figure 1. Indiana Tracts by Digital Divide Groups



Source: PCRD • Created with Datawrapper

Demographics

Figure 2 shows selected demographic characteristics in tracts with a low and high digital divide. A higher share of the population in tracts with a high digital divide are rural, seniors, minorities, poor, and disabled. Minorities include all but White, non-Hispanic. The share of children is roughly the same between low and high digital divide tracts at roughly one-quarter.

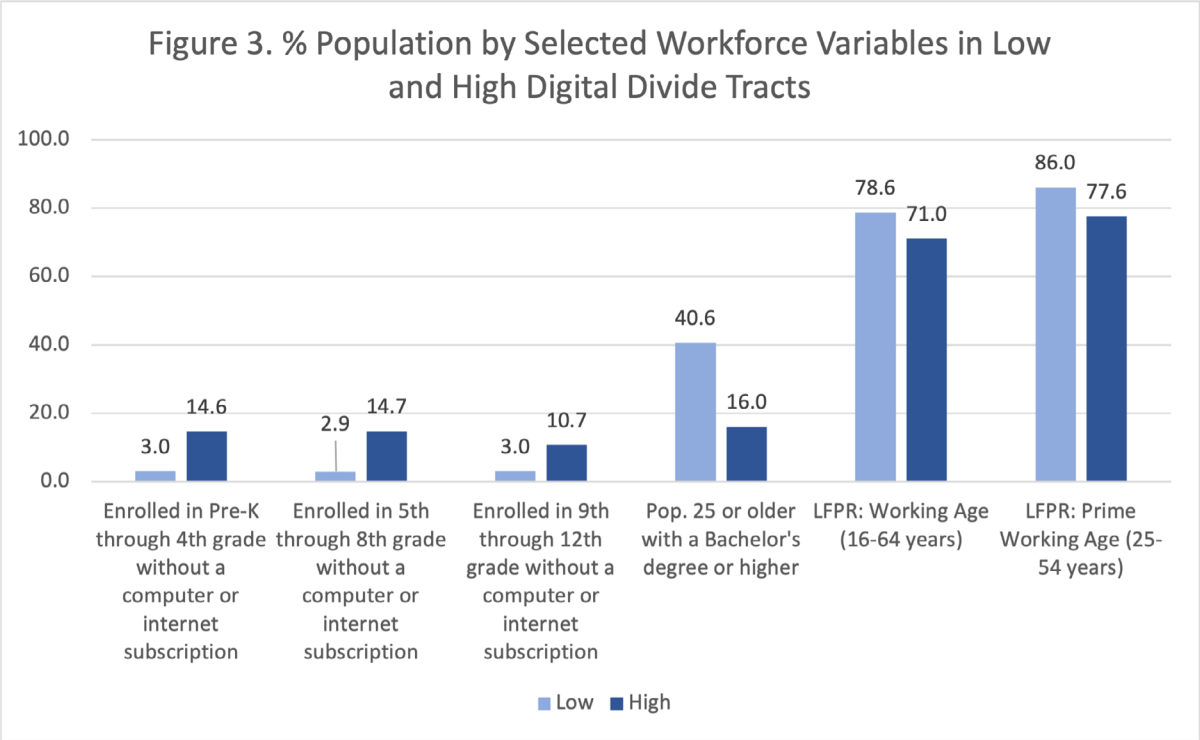


Source: Census ACS 5-Year 2017-2021

Workforce

As the economy continues to digitize, it is important to understand who is being left behind from a workforce perspective. ***Figure 3*** shows the share of population by selected workforce-related variables in low and high digital divide tracts. As shown, the share of children enrolled in K-12th grade without a computer or internet subscription is higher in tracts with a high digital divide regardless of the grade in which they are enrolled.

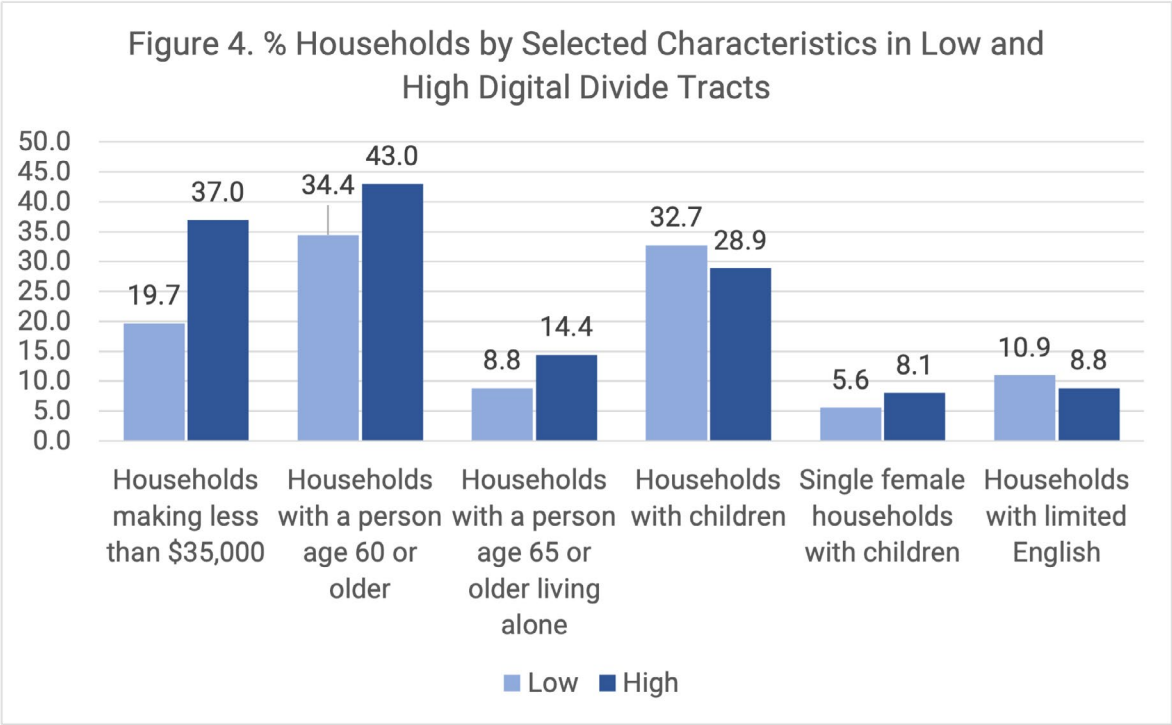
Regarding educational attainment, the share of those 25 years or older in high digital divide tracts with a bachelor's degree or higher is 24 percentage points lower compared to the share in low digital divide tracts (16 versus 40.6). Likewise, the labor force participation rate or LFPR among the working age population (ages 16 to 64) as well as the prime working age population (ages 25 to 54) is lower in tracts with a high digital divide.



Source: Census ACS 5-Year 2017-2021

Households

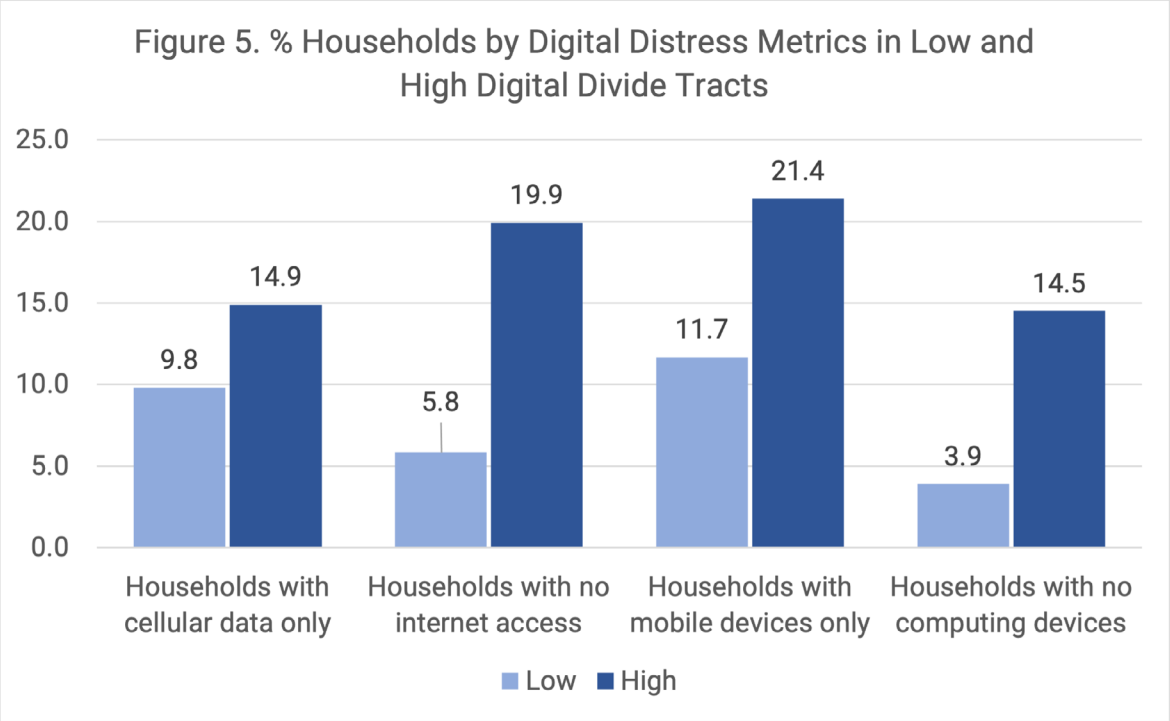
Household characteristics need to be understood within the digital divide context. ***Figure 4*** shows the share of households by selected characteristics in low and high digital divide tracts. The share of lower earning households (making less than $35,000 per year), with a person 60 years or older, with a person 65 or older living alone, and single female headed households with children was higher in high digital divide tracts. Regarding the share of households with limited English proficiency or children, the share was higher in tracts with a low digital divide.



Source: Census ACS 5-Year 2017-2021

Digital Distress and Internet Income Ratio

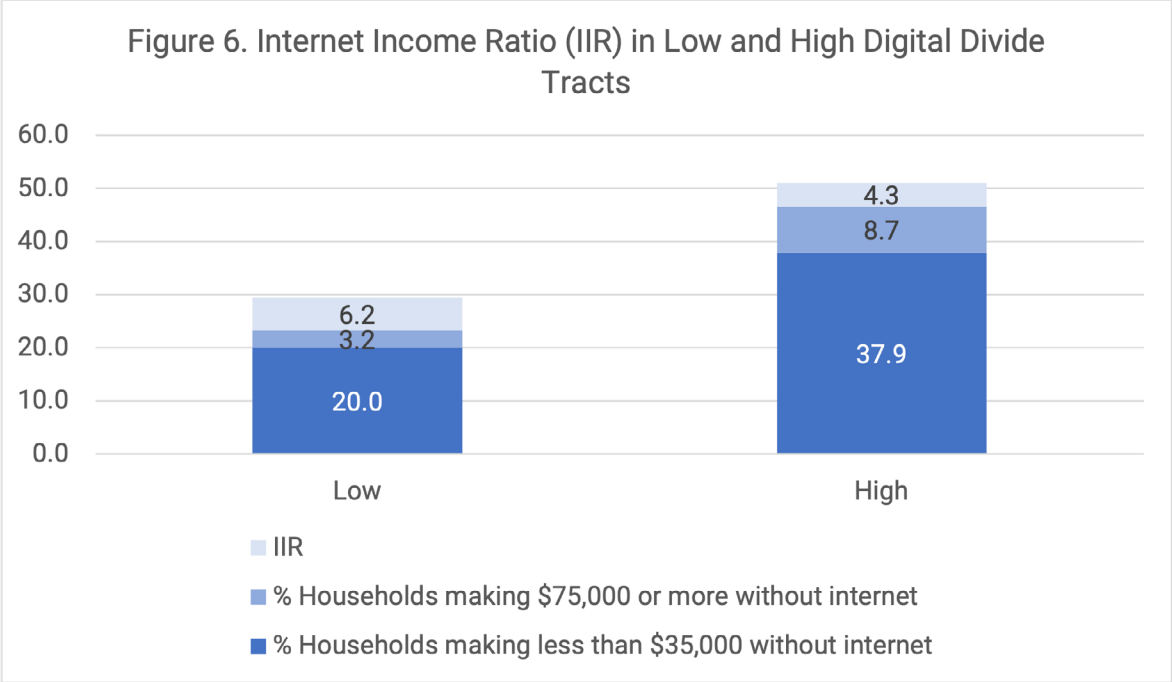
A related metric developed by the Purdue Center for Regional Development is called "digital distress". This metric utilizes fewer variables than the DDI but also offers insights for community leaders and residents regarding digital inequities. ***Figure 5*** shows the four variables used to calculate digital distress by low and high digital divide in tracts. As expected, households in areas with a higher digital divide also had a higher share of digital distress variables. Consider than one-fifth of households in high digital divide areas relied only on mobile devices compared to less than 12% in low digital divide tracts.



Source: Purdue Center for Regional Development; Census ACS 5-Year 2017-2021

One of the variables added to the DDI is the "Internet Income Ratio" or IIR. The IIR gauges digital inequity by dividing the share of homes making less than $35,000 without internet access by the share of homes making $75,000 or more without internet access. A higher IIR denotes a higher inequity.

Figure 6 shows the share of homes without internet access as well as the IIR in low and high digital divide tracts. Notice that although tracts with a higher digital divide had larger shares of lower earning and higher earning homes without internet, the IIR was higher in areas with a low digital divide. In other words, the share of homes making less than $35,000 without internet was 6.2 times higher in areas with a lower digital divide than homes making $75,000 or more without internet compared to 4.3 times higher in areas with a higher digital divide.

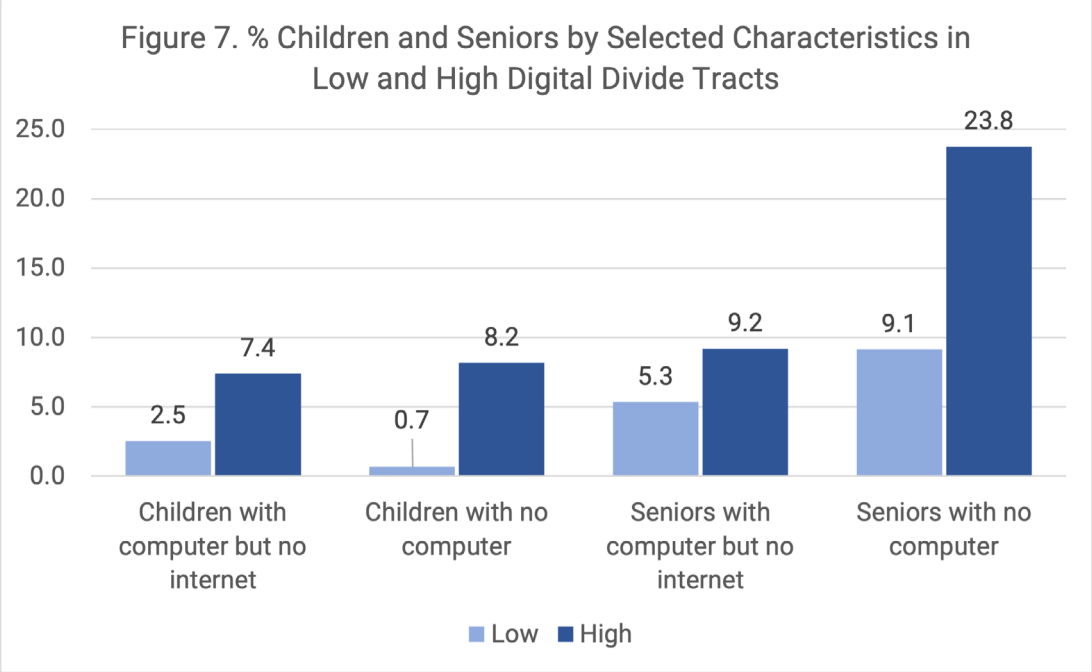


Source: Purdue Center for Regional Development; Census ACS 5-Year 2017-2021

Homework and Senior Gap

The homework gap has been discussed widely during the pandemic. It refers to the percentage of children that do not have internet access and struggle to complete their homework assignments. Another gap—that is not discussed as much—is the senior gap. This refers to the population aged 65 or older with no internet or computer access. This group can enhance their quality of life significantly if they can participate in online activities.

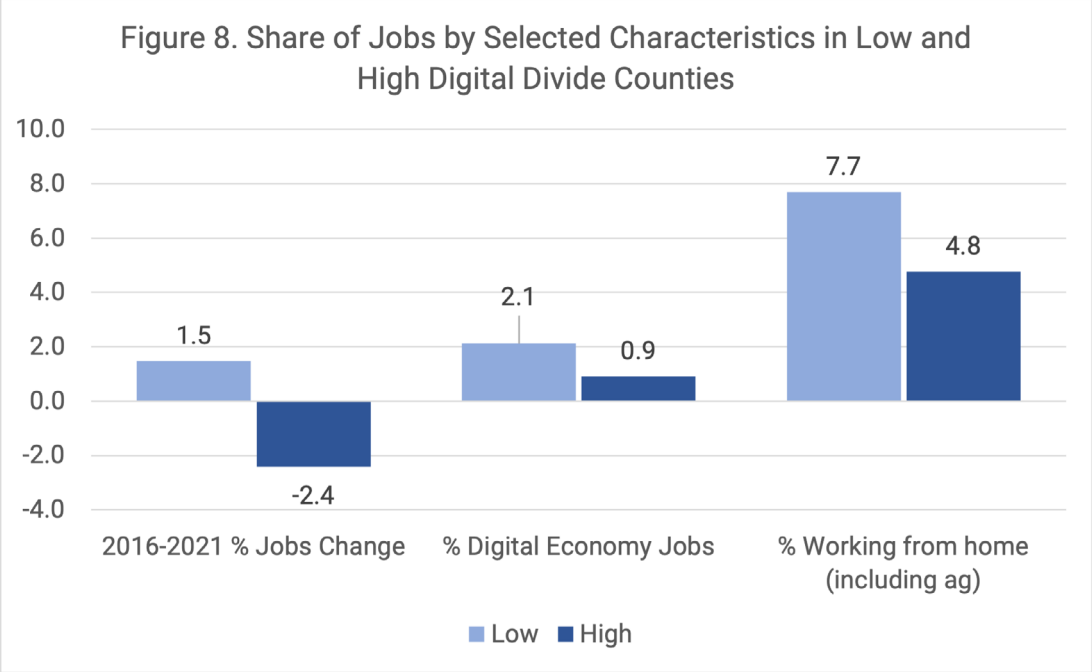
Figure 7 shows the percentage of children and the population ages 65 or older with no access to computers as well as having access to computers but no internet. As shown, tracts with a high digital divide have a higher child (homework) and senior gap. However, it is important to note that while lack of internet is an issue among seniors, lack of computers is more of an issue. Consider that almost one-quarter of the population age 65 or older in high digital divide tracts did not have a computer compared to less than 10% having a computer, but no internet access. A similar pattern is seen among children.



Source: Census ACS 5-Year 2017-2021

Digital Economy

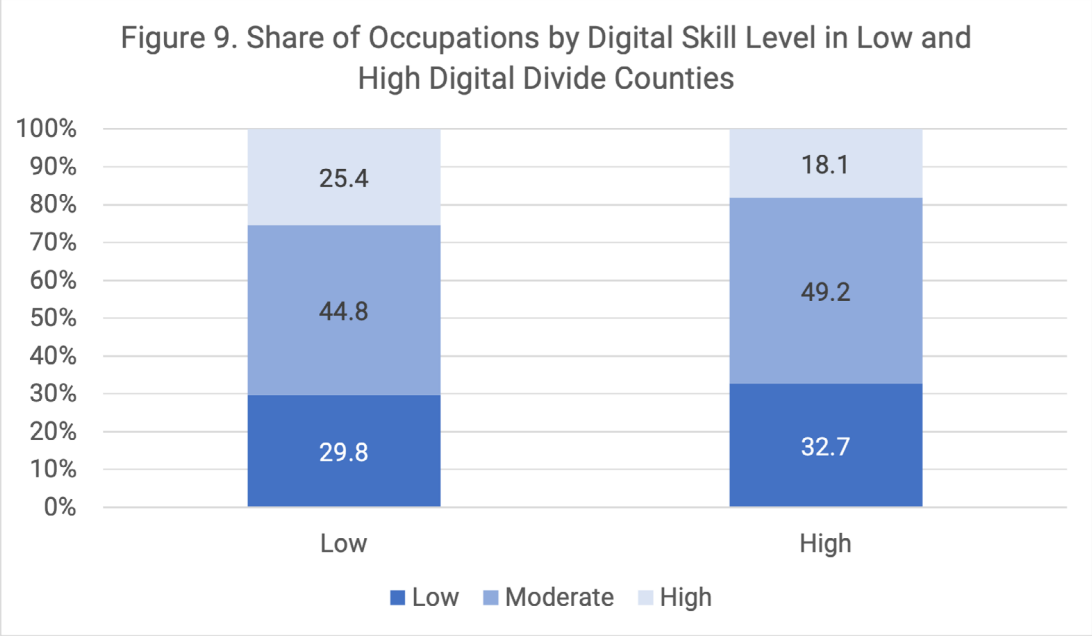
This last group of variables shed light on the digital divide and its economic implications using county-level data. ***Figure 8*** shows the share of jobs by selected characteristics in low and high digital divide counties. Change in jobs between 2016 and 2021 was negative in counties with a high digital divide versus positive in counties with a low digital divide. Likewise, the share of digital economy jobs[1] in counties with a low digital divide was higher compared to the share in counties with a high digital divide, as was the share of workers ages 16 and older working from home, including in the agriculture industry.



Source: Lightcast Q4 2022; Census ACS 5-Year 2017-2021

[1]Includes 44 industries with 6-digit NAICS codes considered to be "fully" part of the digital economy. These are mostly semiconductors, service providers, batteries as well as software developers and data processing to name a few. Does not include warehousing or retail associated with e-commerce.

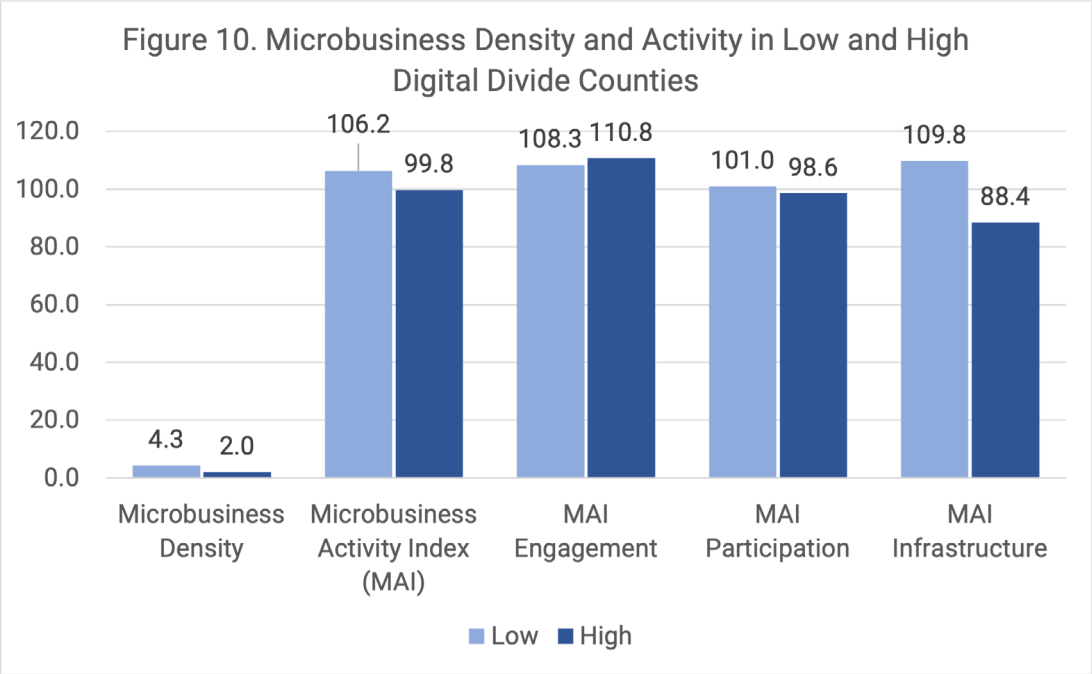
Regarding the roughly 90% of jobs based on occupations for which the digital skills requirement was known, ***Figure 9*** shows that counties with a high digital divide had a lower share of occupations requiring high digital skills (18.1%) compared to counties with a low digital divide (25.4%). Likewise, the share of jobs requiring low digital skills was almost four percentage points larger in counties with a high digital divide compared to counties with a low digital divide.



Source: Lightcast Q4 2022; Brookings; Purdue Center for Regional Development

To wrap-up this analysis, we look at two innovative metrics developed by the Venture Forward project by GoDaddy. The first metric is a microbusiness density metric (the higher the number, the better) that is highly correlated with economic benefits. The second metric is the microbusiness activity index, that considers three components. Infrastructure refers to how ready the county is in terms of physical and intellectual infrastructure. The participation component looks at the number of GoDaddy online microbusinesses run by residents in the community. And the third engagement component looks at how active the websites are in the community. These new metrics are very insightful because there were 2.8 million more online microbusinesses in 2020 compared to 2019.

As shown in ***Figure 10,*** the average microbusiness density in low digital divide counties was more than double the density in high digital divide counties (4.3 versus 2.0). In addition, the microbusiness activity index was almost 7 points higher in low digital divide counties (106.2 versus 99.8) while the infrastructure component was more than 20 points higher (109.8 vs. 88.4). The difference in the engagement and participation is not as high. In fact, the engagement component was slightly higher in counties with a high digital divide.



Source: Venture Forward by Go Daddy

Key Takeaways

The digital divide can be measured in multiple ways. For this analysis, the digital divide index (DDI) was used. Who does the digital divide affect more in Indiana?

- Rural, seniors, minorities, disabled, poor, and veteran residents
- K-12 students with no computer or internet subscription, less educated residents, and lower labor force participation rates both in the working age group (ages 16 to 64) and prime working age group (ages 25 to 54)
- Lower income, older, and limited English proficient households
- Digitally distressed households (no internet access or rely on cellular data only and/or no computing devices or rely on mobile devices only)
- Seniors (age 65 or older) with no computers

As a result, higher digital divide counties have:

- Lost jobs over the past five years
- A lower share of high digital skills occupations (typically pay better)
- Less educated workforce (share with a bachelor's degree or higher is significantly lower)
- Less economically vibrant communities, including online microbusinesses

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