



UNC Greensboro
Department of Economics

A PRELIMINARY REPORT ON THE ECONOMIC IMPACT OF THE IDD COMMUNITY



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Executive Summary...

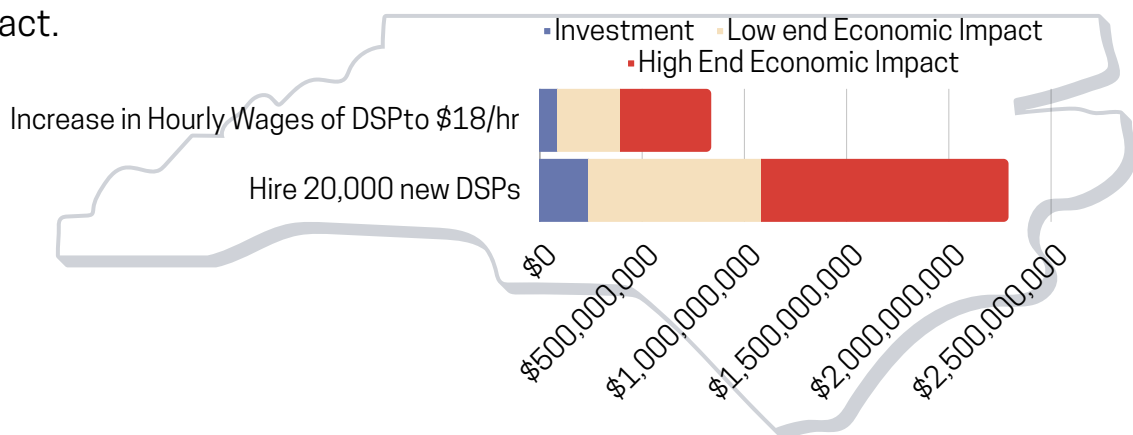
This report examines the economic impact of North Carolina's Intellectual and Developmental Disabilities (IDD) community. This community includes individuals with diverse cognitive and developmental conditions, their families, and the Direct Support Professionals (DSPs) who support them. Notably, DSPs contribute significantly to the state's economy through their vital role in assisting individuals with IDD.

The report adopts a dual approach. First, a systematic review uncovers a lack of existing research on the economic impact of the IDD community. This knowledge gap underscores the pressing need for funding to gain and explore deeper insights into this important area. Second, a preliminary economic impact analysis assesses the potential outcomes of investing in North Carolina's DSP workforce. Based on this preliminary economic impact analysis, we find that:

An investment by the state of North Carolina of \$87,735,567 to increase the hourly wage of the DSP workforce to \$18 would result in a total economic impact of between \$307,951,840 and \$442,187,258 within North Carolina, assuming the North Carolina investment qualifies for Medicaid matching funds.

An investment of \$240,000,000 to hire 20,000 new DSPs, which is how many DSPs the Arc of North Carolina estimates would be needed to address the needs of all individuals on the Innovations Waiver waitlist, would result in an economic impact of between \$842,400,000 and \$1,209,600,000. This investment amount assumes the additional DSPs are hired at an average wage of \$18 per hour, work an average of 2000 hours per year, and that North Carolina funds qualify for the Medicaid match. It also ignores the costs of benefits.

These results are preliminary and subject to several limitations. They nonetheless suggest that investments in the DSP workforce will yield substantial economic benefits to the state of North Carolina. We recommend funding a more comprehensive analysis to better assess the extent of this impact.



Introduction

The Centers for Disease Control and Prevention (CDC) reports that, in 2016 nationwide, about one in six children between the ages of 3 and 17 have some form of developmental disability (Mary E. Cogswell et al., 2022). In North Carolina, the CDC estimates that about twenty-nine percent (29%) of adults, have a functional disability including mobility, cognitive, independent living, hearing, vision, and self-care (Centers for Disease Control and Prevention, 2023). As a result, many of these adults would require some level of assistance in their day-to-day activities.



Individuals with intellectual and developmental disabilities (IDD) represent a diverse spectrum of conditions including, autism, Down syndrome, cerebral palsy, Williams syndrome, and Fragile X syndrome among others, which may require behavioral supports or habitation assistance to live independently (Ervin et al., 2014). The reported prevalence of IDD varies depending on the specific condition and can also be affected by factors such as access to services and support. To address these unique challenges posed by individuals with IDD, government programs such as Supplemental Security Income (SSI) and Medicaid have been established to provide financial support, community-based services and support, access to education, and job training programs to support individuals with IDD to live more independently and participate in the workforce.

The broader community of individuals with intellectual and developmental disabilities (IDD) includes both individuals with IDD and their support network consisting of family members, caregivers, organizations, and individuals who provide services or support to individuals with IDD. Individuals with IDD and their families often bear substantial costs which include medical expenses, special therapy, and in-home and community-based services provided associated with IDD. Families of individuals with IDD may experience a loss of income by facing employment barriers due to the need to provide care, sometimes full-time care, for their loved ones. This may lead to an increase in dependence on government benefits and a lower standard of living.

Government initiatives at the federal and state levels—such as the Innovations waiver, long-term services and supports (LTSS), in-home services, and Assistive Technology—are intended to alleviate some of the costs faced by the IDD community and provide tools and services to empower individuals with IDD to participate fully in economic activities and in the community and society in which they live. This participation contributes to economic growth through increased consumption, workforce engagement, reduction in the need for public assistance and tax revenue generation which is then used for funding of other government programs and services. In addition to financial independence and benefits experienced by individuals with IDD, these programs can also lead to improved mental and physical health, heightened self-esteem, self-confidence, career development, and greater independence (Friedman, 2018).

The impact of individuals with IDD extends to their support networks, encompassing both formal and informal sectors. The informal support workforce consists of family members and caregivers who provide unpaid services. The formal support network, funded through government programs, private insurance, public donations, and out-of-pocket expenses, includes professionals like direct support professionals (DSPs). DSPs are an integral part of the target population for our systematic review in this report, along with case managers, occupational therapists, speech therapists, and behavior analysts. The informal workforce is significantly larger than the formal workforce and ordinarily provides most of the long-term care services for individuals with IDD. The cost of the informal workforce, transportation, housing, respite care, and lost wages for family members who provide care (usually full-time) is difficult to accurately quantify as the costs are borne primarily by the individual and their family.

Both the formal and informal support sectors contribute to the economy by stimulating economic activity and job creation, particularly when they facilitate the integration of individuals with IDD into the workforce. This multifaceted contribution reduces reliance on government benefits, augments workforce productivity, and amplifies economic activity (Pettingell et al., 2022). The primary beneficiaries of these economic benefits are individuals with IDD, who gain from education and training, along with their families and immediate communities.

Despite its importance in North Carolina, little is known about the potential economic impact of the IDD community in North Carolina. This report is a first step towards understanding the potential costs and benefits of the IDD community and focuses on the role of DSPs. This report identifies and summarizes prior studies on the economic impact of the IDD community and assesses the economic impact of the DSP workforce in North Carolina. As a result, a two-pronged approach was used.

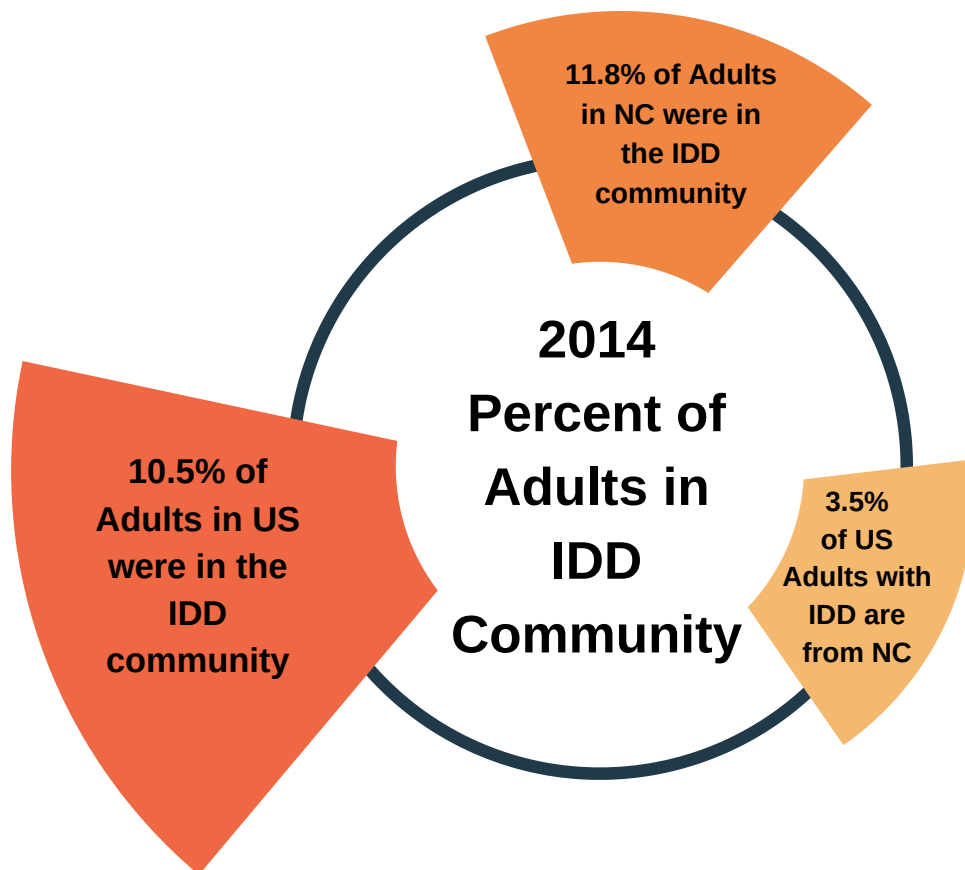
First, a systematic literature search on the topic was conducted to identify and synthesize the current evidence on the economic impact of the IDD community. The primary finding of this systematic review is that there is a paucity of published evidence on this topic. Therefore, we conducted a preliminary, “ad hoc” analysis of the economic impact of the DSP workforce in North Carolina.

The objective of this analysis is to provide valuable insights and contribute to a comprehensive understanding of the economic significance of the IDD community in North Carolina by quantifying the economic impact of investments in the DSP workforce. In this way, our analysis supports the need for additional, more comprehensive analyses on this topic in addition to suggesting that additional investments in the entire workforce of individuals serving the IDD community would generate positive economic impact.

BACKGROUND

Before delving into the comprehensive analysis of the economic impact of the IDD community in North Carolina, it is crucial to establish the contextual backdrop of disability prevalence and the evolving landscape of employment for individuals with disabilities. Understanding the demographic and employment dynamics provides a solid foundation for interpreting our results.

In 2014, 11.8% of North Carolina's adult population aged 18 to 64, equivalent to 715,508 individuals, had some form of disability (Houtenville et al., 2016). In the entire US population, 10.5% or 20,460,136 people had some disability, indicating that approximately 3.5% of the 2014 US population with a disability were from North Carolina.

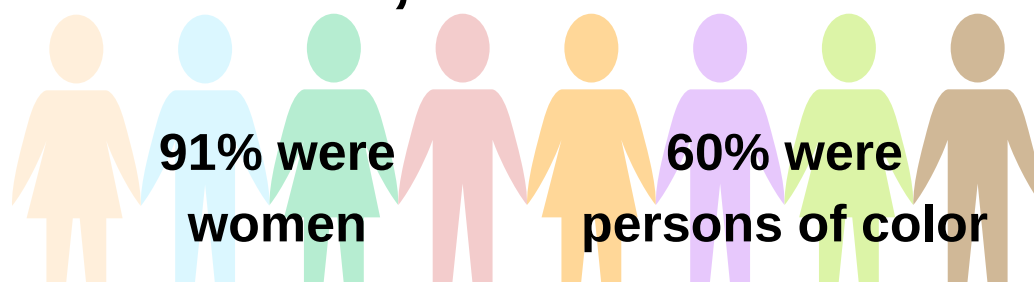


Despite these high numbers, there has been an improvement in recent years as the percentage of civilians with a disability between the ages of 18 and 64 living in a community setting in the US, who were employed, increased from 38.4% in 2020 to 40.7% in 2021 (Paul et al., 2023). Additionally, information provided by The Arc of North Carolina indicates that the current population of individuals with IDD who have applied for or are receiving Innovations Waiver supports in North Carolina stands at approximately 30,000.

This does not account for students in the education system who qualify but have not applied for Innovations Waiver services and support. Nor does it account for the unknown number of qualified individuals who have never applied for Innovations Waiver services as they have been receiving support from aging parents and extended family members.

The spectrum of caregiving within the state also encompasses the DSP workforce, an integral part of the larger cohort of Direct Care Workers (DCW), entrusted with the care of elderly individuals and those with disabilities. As of 2021, a Paraprofessional Healthcare Institute (PHI) project reported that North Carolina employed 112,630 DCWs, with 91% of them being women and 60% being persons of color. These figures underscore the significant contribution of the DCW workforce and highlight the diverse and predominantly female composition of this essential workforce in North Carolina.

In 2021, NC employed 112,630 DCWs



DSPs are employees who provide support services to individuals with IDD and there are estimated to be over 2 million DSPs in the US. The Trade Organization report, submitted to the Division of Health Benefits, reports the average wages paid to DSPs providing Innovations waiver services in 2019 in North Carolina was approximately \$11.50 per hour. In December 2021, the North Carolina General Assembly passed a state budget that included funding intended to increase wages for DSPs to \$15/hour to make up for the decrease in Medicaid rates for home and community-based care (Mahan, 2022). However, the intricacies of wage calculations across different service categories led to a disparity between the allocated amount and the intended increase. As things stand now, while entry-level rates experienced a noticeable uptick, they fell short of reaching the target of \$15 per hour. It is important to note that this wage increase was not extended to other rate categories or positions in this context.

NC Services

The state of North Carolina provides various services for individuals with intellectual and developmental disabilities, including long-term services and supports (LTSS), in-home services, advocacy and community resources, counseling and behavioral health therapy, educational referral, relief care for primary caregivers and families, finding and maintaining employment, learning new skills to live in the community, access to emergency medical and behavioral healthcare, and opportunities for independent living programs through the NC Innovations Waiver and Assistive Technology. The NC Innovations Waiver is a Medicaid program approved by the federal government that provides individuals with the opportunity to live in a community or home setting instead of an institutional setting.

- **LTSS**
- **In-home**
- **Advocacy Resources**
- **Community Resources**
- **Counseling**
- **Behavioral Health Therapy**
- **Educational Referral**
- **Relief Care**
- **Employment Assistance**
- **Community Life Skills**
- **Emergency Medical and Behavioral Healthcare**
- **Independent Living Programs**
- **NCATP**
- **NC-SNAP**

The North Carolina Assistive Technology Program (NCATP) provides assistive technology services such as device demonstration, short-term device loans, and reutilization of assistive technology to people of all age and abilities. Such technology includes computer hardware, specialized software, and communicative boards that individuals with IDD can benefit from and use in their daily lives.

Another service provided by the North Carolina Department of Health and Human Services (NCDHHS) is the NC Support Needs Assessment Profile (NC-SNAP). The NC SNAP is an assessment tool that measures the intensity of need of an individual with IDD to provide services tailored to the individual's needs. The eligibility criteria for this service are to be a resident of North Carolina and have a permanent, lifelong disability that began before the age of twenty-two and results in significant limitations in adaptive functioning.

Money Follows the Person (MFP) is a Medicaid program that provides support for individuals with disabilities, including those with IDD, who want to move from institutional settings, such as nursing homes, to home- and community-based settings. The program provides funding of \$150,000 each contract year to four communities to develop and implement transitioning of line-in patients into their own homes. The goal of the MFP program is to give individuals with IDD more choices and control over their lives, and to improve their quality of life through services such as personal care, transportation, and home modifications, to help individuals with IDD live independently in their communities.



While North Carolina has a significant population of individuals with disabilities, recent data shows improvements in employment rates for this population in the US. However, there is still a gap in earnings and poverty rates between those with disabilities and the general population. The median earnings of a civilian individual aged 18 to 64 living in North Carolina with a disability were \$20,157 in 2014 dollars, and the poverty rate was 30.2%, compared to the country's rate of 28.4% (Houtenville et al., 2016). In contrast, the median earnings of full-time workers in the US with IDD were reported to rise from \$43,776 in 2020 to \$45,315 in 2021 (Paul et al., 2023). These statistics provide a contextual overview of the prevalence of disabilities in North Carolina and highlight recent trends in employment among individuals with disabilities.

Methods

This report conducts two, related analyses. First, we conduct a systematic scoping review to identify the existing evidence on the economic impact of the individuals with IDD. Second, we conduct a multiplier analysis to estimate the potential economic impact of increasing the DSP workforce in NC.

Scoping Review Methods...

The scoping review was conducted to retrieve studies from various sources focusing on the economic impact of the IDD community, and employment outcomes for individuals with IDD and the IDD support workforce.

The databases and websites searched included but were not limited to the North Carolina Department of Health and Human Services, North Carolina Policy Watch, “The Arc of North Carolina,” Google Scholar, ABI/INFORM, Mergent Online, RePEc Ideas, EconLit, Wiley Online, and Research Gate.



Articles eligible for inclusion were both empirical studies (quantitative and qualitative) and observational studies with a focus on studies done in the United States and an emphasis on individuals in North Carolina and studies published in English from inception till the present.

Several search terms were considered including Direct Support Personnel OR DSP OR Direct Care Workers OR DCW OR Individuals with Intellectual and Developmental Disabilities OR IDD OR Intellectual Disabilities OR Developmental Disabilities OR families with individuals with IDD OR firms and companies that have an inclusive staff (individuals with IDD) OR supporting individuals with IDD OR supported employment.

We performed two related scoping reviews: one on the economic impact of people with IDD and one on the economic impact of the IDD-support workforce. The first emphasizes finding and reviewing relevant studies and articles from academic sources, government reports and others to study the trends and gaps in research on this topic, which may be used to inform stakeholders on possible future research and policy decisions.

For the second scoping review we explore the challenges and benefits of the support system of individuals with IDD with DSPs being the target population. There is a severe shortage of candidates to fill numerous open positions for DSPs, which in turn is preventing some individuals with disabilities from finding employment (Currie, 2022). Since the establishment of community support, the challenge of recruiting, training, and especially retaining DSPs to meet the community support service needs of people with IDD has been unwavering (Hewitt & Larson, 2007). Not only does this crisis impact the community of individuals with IDD negatively by affecting the quality of care provided to individuals with IDD and the well-being of the IDD support system themselves, but it also affects society.

“ There is a severe shortage of candidates to fill numerous open positions for DSPs, which in turn is preventing some individuals with disabilities from finding employment (Currie, 2022) ”

In addition to summarizing all findings from the literature, we also recorded the data sets, data methods, or approaches that were used by the various literature and/or research use as well as any models developed in both sections of the policy brief. The study focuses on examining relevant literature and studies that address research questions about the economic aspects of the IDD community. Specifically, the investigation centers around understanding the allocation of costs related to IDD and the identification of beneficiaries. Furthermore, the study explores the dimensions of the formal and informal IDD support workforce, including the parties responsible for bearing associated costs, and the beneficiaries of their services.

Despite the extensive initial search, only a few studies met the inclusion criteria. Some studies that met the criteria focused on the cost-benefit of different programs and policies governing individuals with IDD, studies on employment outcomes and education outcomes, most on quality of life, and

and other outcomes for individuals with IDD, indicating a significant gap in our understanding of the economic impact of individuals with IDD, particularly in terms of the potential benefits that may be derived from their inclusion in the labor market. The initial screening stage included a review of the publication title to determine its eligibility. This lack of comprehensive research on the topic indicates that there is a need for more studies to be conducted to fully understand the economic implications associated with individuals with IDD, and it assumes even greater significance in guiding legislative decisions and policy formulation concerning the integration of individuals with IDD into the workforce.

Multiplier Analysis

Multiplier analysis (Crawford, 2011) and other similar economic impact assessments serve as a potent tool for comprehending the far-reaching economic consequences of specific investments or activities within a given region. In this report, we use this methodology to conduct a thorough evaluation of the substantial economic effects associated with investing in the recruitment, training, and retention of DSPs in NC.

Multiplier Analysis Formula

The multiplier analysis encompasses three distinct impacts. Combining these impacts yields the multiplier analysis formula, which is defined as:

$$\frac{1}{1-(x \times y \times z)}$$

Where x is marginal propensity to consume, y is the percentage of expenditures made in the region, and z is the percentage of business costs in the region.

First, the direct impact looks at the initial investment made in the DSP workforce. This investment includes initiatives like wage increases, training programs, and career advancement opportunities, all of which contribute to bolstering the DSP workforce. This direct impact stimulates economic activity by not only enhancing the livelihoods of DSPs but also improving the quality of care and support for individuals with IDD, thereby strengthening the IDD community's foundation (Friedman, 2018).

Second, the indirect impact delves into secondary economic activities stemming from investments in DSPs. As DSPs see improvements in their wages and work conditions, they tend to spend more within their local communities, boosting sectors like housing, retail, and services. Furthermore, the increased demand for DSPs and their services requires more suppliers, thereby generating additional economic activity.

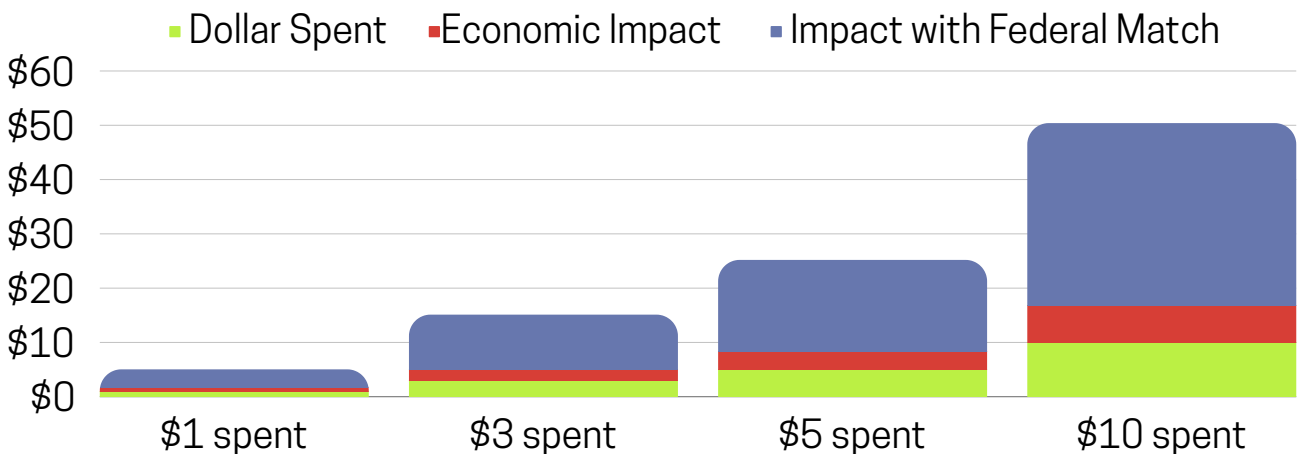
Third, the induced impact captures the tertiary economic activity resulting from higher wages for DSPs and their subsequent spending within the regional economy. Altogether, this comprehensive analysis of DSP investment demonstrates how a strategic focus on this crucial workforce not only enhances the IDD community but also generates substantial economic benefits across multiple sectors, reaffirming their pivotal role in the community and the broader economy.



To conduct our analysis, we primarily relied on data provided by North Carolina Council on Developmental Disabilities (NCCDD) including number of individuals receiving Waiver services, number of individuals on the waitlist, and the approximate number of DSPs statewide serving the individuals receiving the Waiver services as at the first quarter in 2021.

Some basic assumptions were made to estimate the economic impact of the community. Notably, the current federal match is about \$2 for every dollar spent in North Carolina (Kaiser Family Foundation, n.d.). For the state, the percentage of the individual’s income that is spent and not saved was assumed to be 95%, percentage of expenditures made within a 100-mile radius of where they are earned was 85%. And finally, the percentage of business costs in the region is 50%. It is important to note that this is the “local” cost of goods sold within the designated region where “local” refers to the state of North Carolina respectively. This is a “Value Added” calculation that includes goods manufactured and services provided within the US and specifically North Carolina. Local production involves labor inputs, creating employment opportunities and generating income for workers.

Applying these assumptions to the multiplier analysis formula yields a multiplier of 167.7% for the state of North Carolina. This means that for every dollar spent in this community, the total economic output is increased by \$1.68 for NC. This could alternatively be interpreted as for every dollar spent on the DSP workforce, there is an additional 68 cents generated in economic output in North Carolina. Given the federal match, the resulting impact for every dollar allocated by the state of NC will be \$5.04 ($\1.68×3).



The values of the components of the multiplier analysis are based on a set of assumptions. These assumptions draw from hypothetical rates used in (Crawford, 2011). Recognizing the inherent uncertainty in these assumptions, we are incorporating a sensitivity analysis into our approach. In this analysis, we will reduce the rates by 20%, creating a lower-end estimate. The range of values we consider takes into account the variations in the economic impact.

It is important to understand that there is no one-size-fits-all set of numbers appropriate for this analysis. These numbers vary significantly based on regional factors, income levels, industry specifics, occupational dynamics, and more. These variations influence the overall economic impact and the extent to which new income circulates within a given area.

The accuracy of these values depends on factors, including how income is distributed in the region, specific details about industries and occupations and even the geographic locations of DSPs especially if they are near state borders. The lack of information particularly regarding the number of DSPs in North Carolina adds to the uncertainty. Therefore, our approach aims to provide a range of impacts while acknowledging the complexities and limitations involved in such analyses.

For instance, in regions with higher income levels, the marginal propensity to consume may be lower as individuals tend to save a larger portion of their income. Conversely, in areas with lower income levels, the marginal propensity to consume may be higher, leading to a more substantial multiplier effect. Similarly, the percentage of expenditures made within the region can differ based on the availability of local goods and services.

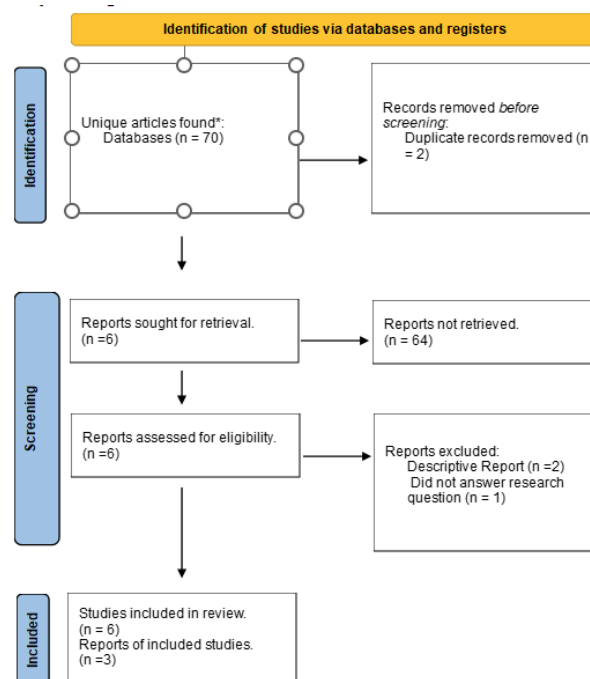
Industry and occupational factors can also play a role. Some industries may have higher business costs, affecting the z component, while others may have lower costs. Additionally, the type of work and income distribution within an area can impact how income is spent and circulated. Therefore, understanding the nuances of these components is essential for accurately assessing the economic impact of specific investments or activities within a given region.

Results

Scoping Reviews

A total of seventy (70) unique studies were identified and screened for eligibility as illustrated in Figure 1. These studies underwent an initial screening process, during which all but six were eliminated as they did not meet the eligibility criteria and/or were not original contributions.

Figure 1 (right): Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Overflow Diagram



To determine their suitability for analysis, the authors thoroughly examined the full text of each study to assess if they addressed the research questions. Two reports were excluded as they were found to be descriptive in nature and did not meet the criteria for inclusion in the analysis. Additionally, another report was excluded as it failed to address the specific research question of interest. As a result, three studies were deemed relevant and were included in the subsequent analysis.

Studies on the economic impact of individuals with IDD

The results focused on measuring economic impact through various metrics namely, employment, household earnings, and economic output. There was only one study that was a close fit to our eligibility criteria that looked at the direct economic impact of individuals with IDD and two studies that looked at the indirect impact. The studies included in the review revealed some important findings related to the economic impact of the IDD community.

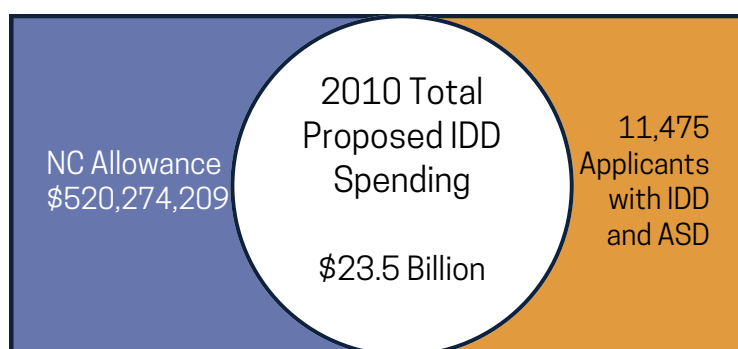
Among the studies reviewed, a report on Missouri's Partnership for Hope (PfH) program (Barton & Gotto IV, 2016) emerged as the most closely aligned with our search criteria. Notably, it revealed significant findings pertaining to the economic impact of the PfH program in Missouri including the added gross

state product experienced by the state. The initiative offers home and community-based assistance for people with intellectual and developmental disabilities. The program resulted in increased access to home and community-based services for individuals with IDD, which has reduced the need for more expensive institutional care. Consequently, both state and federal governments have realized substantial cost savings, while individuals with IDD have experienced an improved quality of life.

The PfH enabled counties to pool resources for services and is based on an original collaboration between the federal government, the state, and the counties. A county and state investment of \$3.5 million each leveraged \$11.7 million in federal funding. This combined investment yielded an economic impact of close to \$22.2 million to Missouri's gross state product (Barton & Gotto IV, 2016). This amount included \$1.3 million in state and local government tax revenue and \$17.8 million in employee income. In addition to that, over 435 jobs were also generated between October 2010 and September 2013, according to a study using IMPLAN software and data.

Furthermore, the study found that the PfH program resulted in improved health outcomes for individuals with IDD. Through access to community-based services, individuals can receive tailored and individualized care that meets their unique needs. This has resulted in fewer hospitalizations and emergency room visits, which not only improves health outcomes for individuals with IDD but also reduces health care costs for state and federal governments.

Another important study was an analysis of the Home and Community Based Services (HBCS) Waiver program. Rizzolo, et al. (2013) found that the total IDD spending proposed by 41 states and DC to Centers for Medicaid and



Medicare Services was \$23.5 billion for the fiscal year 2010. It was proposed that North Carolina would receive \$520,274,209 of this amount, with an estimated 11,475 applicants from the state. The target group for this spending was individuals with IDD and Autism Spectrum Disorder (ASD). This result shows the costs borne by the federal government through policies for the IDD community.

In addition to examining the direct economic impact of interventions for individuals with intellectual and developmental disabilities (IDD), there have been several related studies that consider employment and education outcomes. These factors can also have an indirect impact on economic impact. One such study (Taylor et al., 2021) found positive outcomes associated with employment services, including increased employment rates, earnings, and quality of life for individuals with IDD. Employment is a critical component of the lives of individuals with IDD, providing not only financial benefits but also social connections, opportunities for skill development, and improved quality of life. In a scoping review on this topic, Taylor et al. (2021) found that most studies observed positive effects for the cost-benefit of integrated service approaches such as supported and customized employment and no or in some cases, negative effects on cost-benefit for sheltered workshops.



Studies on the economic impact of the IDD support workforce

For studies on the economic impact of the IDD support workforce, the outcomes considered include employment, economic output, and value-added. The review seeks to demonstrate how both direct and indirect costs and benefits from the adoption of IDD workforce are allocated. After a thorough search of numerous databases and a study of the pertinent literature, no study that examined the direct economic impact of direct support professionals (DSPs) and the other IDD support workforce in the United States was discovered.

However, an external source identified a relevant study, which we have included in this review. The study (Schultz, 2021) was commissioned by New York State industries for the Disabled (NYSID) and New York Alliance for Inclusion & Innovation. It analyzed the economic impact of nonprofit disability service providers in New York for 2019. Utilizing a multiplier analysis, the study assessed direct, indirect, and induced effects stemming from the operations and social enterprises of these disability service providers on the state's economy.



A study commissioned by New York State industries for the Disabled (NYSID) and New York Alliance for Inclusion & Innovation analyzed the economic impact of nonprofit disability service providers in New York for 2019.

This study delved into a thorough examination of the direct, indirect, and induced effects stemming from the operations and social enterprises of these disability service providers on the state's economy. The study found that a total of 427 nonprofit disability service providers in New York collectively generated an impressive \$6.7 billion in revenue. This financial contribution had a substantial ripple effect, resulting in an additional \$7.6 million in economic activity, for a total economic output of \$14.3 billion, while also playing a pivotal role in supporting nearly 195,000 jobs across the state of New York. In addition, the NYSID maintained a \$250.2 million contract portfolio that generated an estimated \$407.3 million in economic impact.

While there is a sizeable body of research that examines the broader economic impact of the intellectual and developmental disabilities (IDD) workforce, including studies on the costs and benefits of interventions for individuals with IDD, there is a gap in the literature on the specific economic contribution of DSPs.

Despite the critical role that DSPs perform in helping people with IDD live fulfilling lives, more research is needed to understand their economic impact, which could guide workforce development and compensation decisions. Future research ought to examine the economic importance of DSPs and how they affect the overall economy, as well as how they help people with IDD integrate into society and the economy.

Estimating the Economic Impact of the IDD Support Workforce

With a comprehensive understanding gained from the systematic review, we now shift towards quantifying the economic impact of the North Carolina IDD support workforce in monetary terms. This section provides a preliminary analysis of the economic impact for the state and the nation investing in the DSP workforce. The economic impact of the IDD community extends beyond the boundaries of North Carolina, influencing not only the state but also having spillover effects on the nation as a whole. By briefly examining these effects, we can gain insights into the broader economic implications beyond the immediate region.

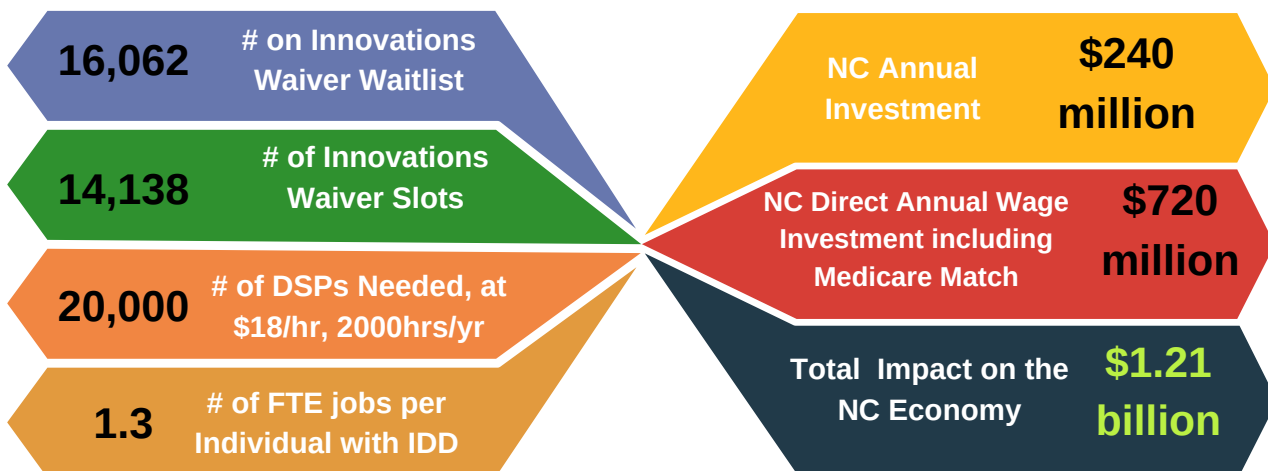
To appreciate the scale of this economic impact, it is crucial to understand the investment required. As per the findings of Davidson, Holland, & Whitesell (2023), it would require an additional investment of approximately \$266,000,000 for North Carolina to increase the minimum wage of DCWs, or in this context DSPs who fall under the DCWs in the Innovations program, from \$11.50, as it was before the COVID-19 pandemic, to \$18 per hour. This figure encompasses contributions from both the state and Federal Medicaid dollars, illustrating the substantial investment needed to reach the desired wage level. If this investment is eligible for Medicaid matching funds, the state of North Carolina would be responsible for contributing one-third of the total expenditure, or \$87,735,567, which is the state's investment in this initiative.

Based on the multiplier assumptions stated previously and assuming the Medicaid match applies, an investment by the state of NC of \$87,735,567 in the DSP workforce would result in a total economic impact of \$442,187,258 within NC.

There are approximately 14,138 Innovations Waiver slots as of March 1, 2022 in North Carolina (North Carolina of Department of Health and Human Services, 2023). However, as of April 2023, the North Carolina Council on Developmental Disabilities reports there is a considerable waitlist with 16,062 individuals actively seeking these services. To adequately address the needs of those on waitlist, The Arc of North Carolina estimates an additional 20,000 DSPs, or an average of 1.3 full time equivalent (FTE) jobs per individual with IDD, would be required throughout North Carolina.

If the necessary additional DSPs are hired at an average wage of \$18 per hour and work an average of 2000 hours per year, this would require a total direct annual wage investment of \$720,000,000 to serve the individuals on the waitlist. Assuming the Medicaid match applies, this would require an annual investment of \$240,000,000 from the state of NC. Based on the multiplier assumptions stated previously, the total impact on the NC economy of this investment would be \$1,209,600,000.

To explore the limitations stemming from the assumptions underlying the individual components of the multiplier, we implement a deliberate reduction of 20% for each of the multiplier components. This adjustment resulted in revised percentages of 75% for the marginal propensity to consume, 65% for expenditures made within NC, and 30% for business costs, respectively.



This adjustment culminates in the calculation of a new multiplier, which now stands at 1.171 (\$1.17) not considering the Medicaid match and 3.513 (\$3.51) when the Medicaid match is included. To put our estimated multipliers in context, the implied overall multiplier from the PfH evaluation (Barton & Gotto IV, 2016) was 3.17 on the combined \$7 million state and county investment, after factoring in the federal match. The implied multiplier from the NYSID evaluation was 1.63 on the NYSID contract portfolio.

With the new multiplier, an investment of \$87,735,567 to increase the hourly wage of the existing DSP workforce to \$18 would result in a total economic impact of \$307,951,840 within NC. An investment of \$240,000,000 to hire 20,000 new DSPs would result in an economic impact of \$842,400,000.

This revised estimate reflects a more conservative perspective, considering the potential variations introduced by the adjusted assumptions. This approach, by incorporating a sensitivity analysis and providing a range of potential outcomes, allows us to present a more comprehensive assessment of the economic impact associated with increasing DSP wages, considering the uncertainties intrinsic to the original assumptions.

These figures highlight the potential economic benefits of investing in the IDD community in North Carolina, both for the current beneficiaries of waiver services and those on the waitlist. This impact can be attributed to the expanded reach and enhanced support provided by the additional DSPs, resulting in heightened economic activity and a more pronounced multiplier effect within the IDD community, positively influencing the state's economy as a whole.

The employment of additional DSPs not only creates employment opportunities but also contributes to job growth within the state. By investing in the recruitment, training, and employment of additional DSPs, the state of North Carolina can both address the immediate service gap and stimulate job creation. The new positions will not only benefit the individuals with IDD by providing the necessary support but also contribute to the local and regional economies through increased employment opportunities, reduced unemployment rates, increased disposable income, and the potential multiplier effects as the wages earned by DSPs circulate through the economy.

However, it is important to acknowledge some limitations to this analysis including a lack of extensive literature on this research area. There is a lack of reliable, direct, and accurate sources for critical information. Specifically obtaining accurate universal figures for the number of DSPs in North Carolina, their average hourly wage, and the precise number of individuals with IDD poses a challenge. DSPs often fall under the umbrella of Direct Care Workers making it complex to isolate specific data related to only DSPs.

The analysis also lacks information on the exact number of individuals with IDD who could join the workforce and the number of family members who could rejoin the workforce if they had services, which may affect the accuracy of the economic impact estimates. Lastly, our multiplier analysis relied on assumptions that did not have strong support in the literature. Although our final multiplier was in line with those used in other studies, additional work should be done to establish a more rigorous evidence base for our multiplier assumptions.

Discussion...

The preliminary results of the systematic review provide important insights into the costs incurred by the IDD community, in what proportion it is shared, and what benefits the IDD community enjoys. The primary findings on economic impacts, particularly benefits, apply to the worker and national perspectives. In other words, workers benefit from increased income from employment while the government sees an increase in the gross domestic product (GDP) and GDP per capita. While our study primarily focuses on the economic impact of DSPs and the broader IDD support workforce in North Carolina, it is instructive to consider the findings of related studies conducted in Missouri and New York. Particularly in Missouri, the Partnership for Hope Home and Community-Based Medicaid Waiver program has improved health outcomes, reduced costs, created jobs, stimulated the economy, and improved the quality of life for people with IDD. These findings emphasize particularly the importance of funding home and community services for people with IDD because they not only improve individuals with IDD's lives but has also had a ripple effect on the broader economy.

The New York study, employing a multiplier analysis similar to our approach, demonstrated the significant economic ripple effects generated by nonprofit disability service providers. They generated a staggering \$127,163,254 in labor income, encompassing employee salaries, wages, the value of employee benefits and proprietor income. These providers, akin to DSPs in our analysis, contribute substantially to their local and regional economies. In 2019, the New York study found that these providers generated sustainable revenue and contributed significantly to their local and regional economies. They estimated an impressive \$14.3 billion in annual economic activity resulting from the services provided by disability services providers. Importantly, the implied overall multiplier from the New York study is on par with that used in our analysis.

As impressive as these economic impact findings are, they may miss some important, human impacts. It is easy to see the negative impacts of action in terms of cost and the negative impact of inaction in terms of outcomes. If we are funding services at appropriate levels, we cannot easily show the cost impacts of people not using crisis response systems such as hospital EDs, at least in the short term. That metric is even more difficult with this population which even in the best of circumstances will utilize those systems more frequently and with greater acuity than the non-IDD population.

While our study focuses primarily on the economic impact of DSPs and the broader IDD support workforce, it is important to acknowledge that we do not explore the potential for DSPs to facilitate families' return to work, which could amplify the economic impact further.



Enabling families that provide care for their loved ones' access to reliable DSP services, will provide them with the necessary support to re-enter the workforce, reducing dependence on government benefits and enhancing overall economic outcomes for both families and the IDD community.

Moreover, it is crucial to consider the federal Medicaid match, which represents new funds injected into the state's economy. This financial support not only sustains the DSP workforce but also has a broader economic effect by stimulating spending and job creation. Therefore, while the economic impact from existing DSP employment may not be entirely "new," it is still significant and when combined with federal contributions, contributes positively to the state's economic vitality.

The findings of the economic impact analysis of North Carolina also highlight the importance of addressing the workforce shortage and the potential positive outcomes associated with investing in the IDD community. North Carolina can make significant progress in enhancing the overall support provided and bridging the service gap within the IDD community by prioritizing the recruitment and retention of DSPs. A lack of data restricts our findings and limits the ability to provide precise figures on the number of individuals who would be hired as DSPs and the exact economic impact/effect from that investment. Further research will be needed to gain a more comprehensive understanding of the potential workforce and economic implications associated with addressing the workforce shortage in the IDD community.

Next Steps

Moving forward, to further examine the economic impact of the IDD community in North Carolina, we recommend the use of IMPLAN software, as was done for the evaluation of Missouri's PfH program. IMPLAN is a powerful input-output software used to conduct economic impact analysis and predict economic changes and activities given economic impact data.

If we raise DSPs' wages by a dollar each, it is expected to lead to a corresponding increase in the overall economic impact. However, what is particularly crucial is discerning the new economic impact on the state of North Carolina. This centers on determining the proportion of that \$1 increase that originates from within the state, including state taxes and revenue, versus the portion that represents entirely new income entering the state. To carry out this analysis, we will leverage the IMPLAN software, which is adept at precisely quantifying these economic dynamics.

We recommend an approach be used similar to that used in Missouri (Barton & Gotto IV, 2016) as it offers valuable lessons and a potential model for understanding the economic implications of investing in the IDD community. A similar methodology will be adopted to analyze the economic impact of the IDD community in NC. Even though the Missouri paper focused on one initiative, it still serves as a good template to guide the approach and ensure consistency in the analysis.

The use of the IMPLAN software will enable us to capture and understand the relationships between several sectors of the economy and quantify the direct, indirect, and induced effects resulting from investments in the IDD community. IMPLAN provides relevant data including household spending data, area demographics, industry data such as industry output, labor income, and taxes paid, and commodity data including foreign and domestic imports and exports by commodity and commodity sales by government and industry at the regional level. Economic contributions of this sector could be generated by specifying the relevant data to North Carolina such as expenditure patterns, size of the support workforce and the number of individuals receiving service. The software also creates the opportunity to understand the economic interdependencies of related industries by examining the ripple effects of the state's economy.

These findings will contribute to a deeper understanding of the economic benefits and inform policymakers and stakeholders in making informed decisions regarding resource allocation and policy development.

Conclusion

The comprehensive systematic review of the economic impact the IDD community has demonstrated that there is still a significant knowledge gap in our understanding of the economic impact of the IDD community, despite growing recognition of the importance of inclusion and employment opportunities for individuals with IDD. While the existing evidence drawn from studies examining employment outcomes and support costs for individuals with IDD suggests the presence of significant economic challenges, there remains a noticeable gap in research pertaining to the potential economic advantages. It is crucial to underscore that a deeper exploration of the economic benefits arising from engaging with the IDD population is imperative. This not only aids in comprehending the economic ramifications of this community but also provides invaluable guidance for shaping policy and decision-making processes.

To address this knowledge gap and gain a more comprehensive understanding of the economic impact of the IDD community, we conducted an economic impact analysis using a multiplier approach. Including the federal Medicaid match of \$2 for every dollar spent in North Carolina, our results revealed a significant economic impact both within the state and on a national scale. Specifically, channeling one dollar into DSPs, including enhancing their wages, yields a total economic output of \$1.68 within North Carolina.

Although it is difficult to provide exact monetary figures, it is clear from our analysis and systematic review that the IDD community provides a substantial economic impact in the state of North Carolina, influencing the overall well-being and inclusivity of the state and the nation. By investing in research and data collection, policymakers can make informed decisions to address the challenges faced by the IDD community and tap into their economic potential more effectively.



The systematic review and economic impact analysis of the IDD community reiterate the need for continued research to better understand the economic implications of supporting individuals with IDD. To unlock the full economic

benefits of engaging with the IDD population, it is imperative to prioritize further research in this area. In addition to addressing this knowledge deficit, we recommend dedicated funding for conducting comprehensive studies and research.

By investing in this endeavor, we can cultivate a deeper insight into the intricate dynamics of the economic contributions and challenges faced by individuals with IDD. This, in turn, will pave the way for informed policy decisions and more inclusive practices, ultimately fostering a more prosperous and equitable societal landscape for everyone. Prioritizing the economic well-being of the IDD community and combining systematic reviews with detailed economic impact analysis will enable us to derive more precise and meaningful monetary values that contribute to a more inclusive and prosperous society.



Additionally, this strategic investment can empower policymakers in creating opportunities for meaningful participation in the labor market, thereby stimulating economic growth, and building a stronger foundation for the future. To further strengthen the

support network for individuals with IDD, a crucial step involves prioritizing the recruitment, training, and retention of DSPs. These professionals serve as essential pillars in delivering assistance to the IDD community. Strategies like augmenting wages, implementing comprehensive training programs, and offering clear pathways for career advancement can significantly contribute to addressing workforce shortages while simultaneously bolstering economic productivity.

Also, to comprehensively address the economic impact of the IDD community, it is imperative to foster collaboration among governmental agencies, non-profit organizations, academic institutions, and community stakeholders. By pooling resources, expertise, and data through collaborative initiatives, a more accurate and holistic understanding of the economic implications can be achieved. This collaborative approach not only informs well-rounded research endeavors but also enhances service delivery for the IDD community, ensuring their needs are effectively met.

To facilitate a more active participation of individuals with IDD in economic activities, it is crucial to enhance their access to services and support. This can be achieved by bolstering the existing support network, encompassing social services, educational programs, and vocational training. Such measures can significantly amplify the economic outcomes for this community.

To comprehensively address the economic impact of the IDD community and pave the way for a more inclusive and economically vibrant future, the nurturing of entrepreneurial endeavors within the IDD community as well as the adoption of inclusive hiring practices within businesses and organizations is vital. Nurturing entrepreneurial endeavors can be accomplished by providing necessary resources, mentorship, and financial backing for startups led by individuals with IDD. Also, encouraging diversity and the integration of individuals with IDD into the workforce can be achieved through a combination of government incentives, collaborative partnerships, and comprehensive awareness campaigns. These efforts not only bring about positive transformations in the employment landscape, but also contribute to overall economic growth, empowering individuals, promoting greater financial independence.

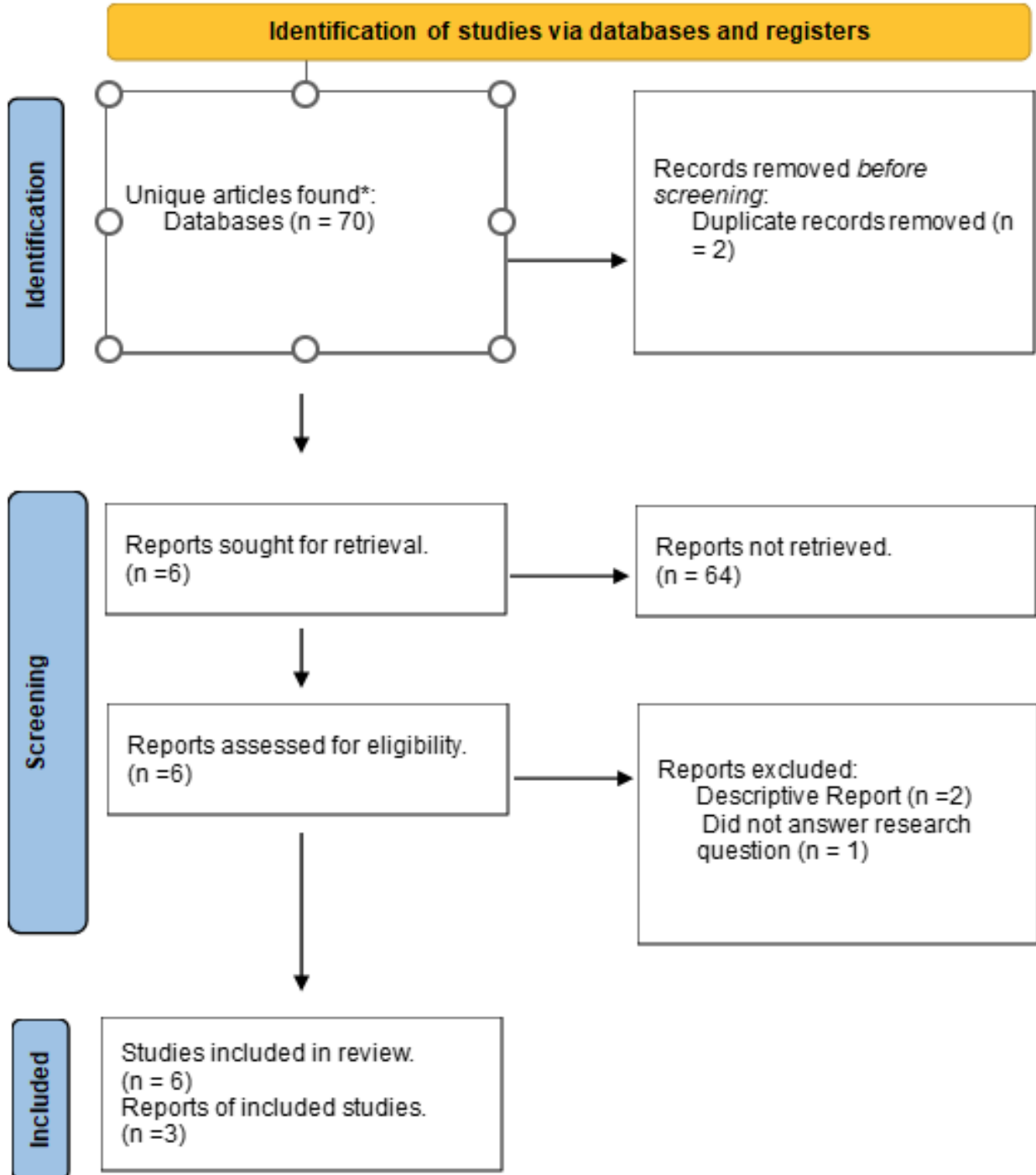
Introducing IDD-specific considerations into policy frameworks related to healthcare, education, workforce development, and social services is paramount. Recognizing the distinct needs and contributions of the IDD community in policy formulation can effectively pave the way for economic inclusion and growth.

Lastly, raising public awareness about the considerable economic potential of the IDD community and the advantages of inclusive practices cannot be overstated. Advocacy campaigns play a pivotal role in creating an environment that fosters support, leading to broader societal shifts toward increased inclusion and a better understanding of individuals with IDD.

In conclusion, by prioritizing collaborative efforts, inclusive practices, and targeted policies, we can harness the untapped economic potential of the IDD community, fostering a more inclusive and prosperous future for all.

Appendix

Figure 1: Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Overflow Diagram



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