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Developing Disability-Inclusive Programs to Empower Farmers: Lessons Learned from AgrAbility

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Keywords

Program development, AgrAbility, Disability, Farming, Social Justice

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Abstract

Disabilities have profound effects on farm households. Establishing disability-inclusive programs will improve the well-being and quality of life of farmers with disabilities and their communities; in turn, this will accelerate efforts to achieve social justice. A qualitative approach was employed to identify and aggregate essential strategies used by seven AgrAbility states for developing disability-inclusive programs and to explore how social, political, and ethical stances are addressed or enacted within AgrAbility's planning processes. The findings laid a foundational framework that could serve as a catalyst to answer the following question: 'To what extent can the social, political, and ethical domains be addressed or enacted within the development of programs serving farmers with disabilities?' The framework, based on AgrAbility states' strategies, can serve as an initial source for other extension agents and program planners in U.S. states and countries that do not have AgrAbility but are interested in developing disability-inclusive programs.

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Introduction

The agriculture sector plays a profound role in enhancing the Gross Domestic Product (GDP) growth rate and increasing the employment rate. The U.S. Department of Agriculture Economic Research Service has reported in 2023 that the agriculture industry contributed roughly \$1.530 trillion to the U.S. GDP. Miller and Aherin's (2018) study on the prevalence of disabilities in the U.S. revealed that, between 2008 and 2016, around 19 percent of U.S. farmers (395,000 people) live with a disability, with physical disabilities ranked highest at 10%. Previous scholarly works stated that people with disabilities experience difficulties performing their jobs and have less motivation to continue working due to several reasons: the rural isolation, limited accessibility to facilities and transportation, limited accessibility to disability-inclusive assistance programs, and anxieties about experiencing additional injuries (Agyei- Okyere et al., 2019; Field & Jones, 2006; Gorucu et al., 2022; Li et al., 2024; Marinaci et al., 2023; National Council on Disability, 2023; News Bank, 2016; Sango et al., 2022). Eventually, these challenges may affect agricultural workers with disabilities financial stability and increase their unemployment rates (Jain et al., 2018; National Council on Disability, 2023).

The challenges facing people with disabilities support Buckup's (2009) notion that people with disabilities cannot perform their work not because of their disabilities but because of the disabling environment. Additionally, providing "development programs and policies that are not disability-inclusive will leave persons with disabilities behind" (Mactaggart et al., 2018, p. 1). The 2030 agenda for sustainable development pointed out that "disability cannot be a reason or criteria for lack of access to development programming and the realization of human rights" (World Bank, 2023, p. 1). Developing agricultural assistance programs with disability-inclusive intent can contribute to 1) providing agricultural workers with disabilities with sufficient skills and knowledge to improve their livelihood, 2) upgrading supportive services to meet the work needs of agrarian workers with disabilities, and 3) increasing agricultural workers with disabilities' contributions to the agriculture sector (Gutenbrunner & Nugraha, 2018; International Disability Alliance, 2018; Tinta & Kolanisi, 2023). However, a few scholarly works addressed developing agricultural assistance programs with disability-inclusive intent to improve the quality of life for farmers with disabilities.

In response to this gap, the study aimed to 1) identify and aggregate essential strategies used by different State and Regional AgrAbility Projects (SRAP) for developing disability-inclusive programs, and 2) explore how social, political, and ethical stances are integrated into ongoing program planning processes. Three integrated planning models (the Targeting Outcomes of Programs [TOP] model, Cervero and Wilson's, and Sork's planning models) were used as a conceptual framework to guide the study questions: 1) What are the planning strategies employed in the development of AgrAbility programs? And 2) How, if at all, are the social, political, and ethical domains addressed or enacted within AgrAbility's planning processes?

AgrAbility is a nationally funded program established by the Farm Bill in 1990 and administered by the National Institute of Food and Agriculture (NIFA) under the USDA (AgrAbility, n.d.). The AgrAbility program currently exists in 28 states; it provides farmers and ranchers with disabilities various supports to regain employment in farming and access assistive technology that ultimately impact their well-being (Fetsch & Turk, 2018; Hamm et al., 2012; Hancock, 2008; Osman & Peterson 2023; Rodger et al., 2001; Wilbanks & Ivankova, 2015). In each state where the AgrAbility program exists, Vocational Rehabilitation (VR) Services collaborate to improve rural farmers with disabilities' quality of life.

Vocational Rehabilitation (VR) Services is a partnership between the federal government (which provides roughly 78% of the funding) and state governments (which provide the remaining budget) and exists in all 50 states. Each state has its way of distributing and using the funds via the Rehabilitation Services Administration (RSA), which is under the Office of the Special Education and Rehabilitation Services (OSERS)—a part of the Department of Education (Government Publishing Office, 2001). Although, VR services are provided free of charge, eligibility for accessing VR services is based on three parameters as stated federal VR program regulations: 1) the applicant is diagnosed with physical or mental impairment, 2) the applicant's physical or mental impairment affects their employment, and 3) through the VR counselor's assessment, the applicant requires VR services to prepare for, secure, or regain work (Government Accountability Office, 2009).

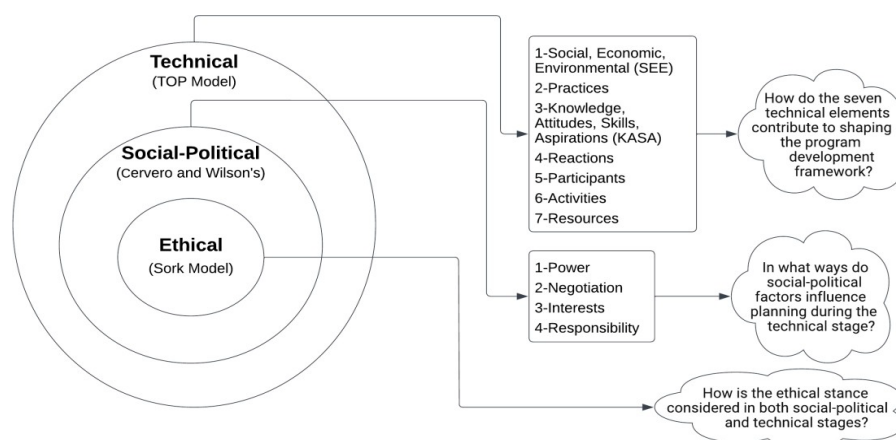
Conceptual Framework

Developing a program entails "studying the past, analyzing the present situation, and forecasting the future course of action" (Suvedi & Kaplowitz, 2016, p. 34). Understanding communities' genuine needs will help develop adequate programs, products, or services to meet local needs (Garst & McCawley, 2015). Due to the contemporary communities' problems, there is a tendency to "blend a number of program development models to fit communities' context, interests, and values" (Franz et al., 2015, p. 6). Additionally, there is a need to understand the factors embedded in developing program and how those factors inhibit or support the ongoing planning process.

Hence, to explore AgrAbility programs' strategies for developing disability- inclusive programs, I integrated three program development models (the TOP Model, Cervero and Wilson's, and Sork's planning models) to be used as a conceptual framework to guide the study questions (see Figure 1).

Figure 1

Three Integrated Program Planning Models Refined from Top, Cervero-Wilson's, and Sork's Planning Models



The TOP model (Rockwell & Bennett, 2004) was selected due to its "relevancy and application to the operational contexts of Extension programming" (Diaz et al., 2021, p. 2). The TOP model includes seven phases: 1) Social, Economic, Environmental [SEE] conditions, 2) Practices, 3) Knowledge, Attitudes, Skills, Aspirations [KASA], 4) Reactions, 5) Participants, 6) Activities, and 7) Resources. However, the TOP model offered only technical step-by-step planning programs, a step focused on valuing social justice was absent in this model. Therefore, Cervero and Wilson's planning model (power, interests, negotiation, and responsibility) (1994) and the Sork's planning model (ethical, social-political, and technical) (2000) were used as complementary models.

Cervero and Wilson's (1994) model purpose is to seek democracy and social justice, especially when programs target vulnerable populations. The voices, values, needs, and interests of people living with disabilities must be considered while planning programs. Additionally, the ethical domain in Sork's model is "the deepest domain in the framework, and the one least often addressed in planning" (2000, p. 186). Sork's (2000) planning model focus on raising questions rather than offering detailed steps of planning programs.

Sork assumed that "answering questions will lead to better decisions and, therefore, better programs (2000, p. 35). Since most planning models focus on technical procedures, I found that Sork's planning model can shift planners' attention to the ethical stance at play in the planning process. Ultimately, integrating the three models helps elucidate the ongoing AgrAbility planning process through the social, political, and ethical lens.

Methodology

The contact information for the AgrAbility directors was obtained from the AgrAbility website. An email explaining the research's aims, procedures, and including an attached IRB approval letter, was sent to all 28 states. Additionally, a Zoom meeting was offered to program directors for any additional inquiries about the research. Seven states (California, Colorado, Maine, Nebraska, Texas, Virginia, and West Virginia) expressed a willingness to share their state program experiences. One state represents affiliated projects; while these states are no longer funded through USDA AgrAbility, they still have other funding sources (i.e., sponsorship, fundraising) to provide services. The other six AgrAbility states represent programs that still receive funds from USDA. Six states were interviewed using the Zoom platform; the seventh state faced internet access issues, so the interview was conducted over the phone. The interviews lasted between 30-45 minutes and were recorded for transcription purposes. The interview questions focused on exploring, 'To what extent are the social, political, and ethical domains addressed in developing disability-inclusive programs from AgrAbility states' perspectives.

The data generated from the interviews were analyzed using the inductive (i.e., bottom-up) approach and presented in quotes and framework. The inductive approach is a systematic analysis that generates concepts, themes, and models by interpreting the raw data into themes (Thomas, 2006). The inductive approach serves a threefold purpose: 1) condensing raw textual data into a brief, summary format, 2) establishing clear links between the research objectives and the summary findings derived from the raw data, and 3) developing a framework of the underlying structure of experiences or processes that are evident in the raw data (Thomas, 2006, p. 237). The outcomes of using the inductive approach are "themes or categories most relevant to research objectives identified" (Lincoln & Guba, 1985; Thomas, 2006, p.241). ATLAS.ti software was used to generate and organize codes and themes following the inductive approach.

To ensure the trustworthiness of the qualitative data (Lincoln & Guba, 1985), the peer debriefing technique was employed to establish credibility (i.e., the research data and process were reviewed by four researchers familiar with the study) (Creswell & Miller, 2000). Additionally, a thick description technique was used to explain the study context, participants, methodology, analysis procedures, and findings in detail (Lincoln & Guba, 1985). Lastly, supported quotes for each generated theme were provided, allowing readers to see both the researcher's interpretations and research participants' quotations.

Results

Three major themes were generated from analyzing transcripts of seven AgrAbility program states: 1) capacity-building strategies, 2) strategies for promoting social justice, and 3) recognizing challenges in the planning process. Each theme, its subthemes, and the essential quotations are illustrated.

Capacity-Building Strategies

The theme focused on the needed competencies, resources, partnerships, relationships, and alternate funding for developing inclusive programs for farmers and ranchers with disabilities.

Required Competencies and Resources

The key competencies shared by AgrAbility planners include understanding farming and disability backgrounds, acquiring communication skills, knowing farmers' cultures and lifestyles, advocating for farmers, being aware of available resources, staying updated on the latest research and trends related to agriculture and disabilities, providing customized assistance and services, selecting program team members, acquiring case management skills, and tracking case and program progress. The first competency frequently highlighted by interviewees is that coming from a farming background helps earn farmers' trust. Also, the way AgrAbility staff talk with farmers about their disabilities influences their trust as well: "You could have trouble earning the farmers' trust if you do not have the farmer elements upfront." Another interviewee said, "Also making sure that our staffs can talk to them [farmers], they have an agricultural background, and they can speak to their communities. That's important."

Acquiring communication skills was the second competency pinpointed by interviewees. Communication with farmers with disabilities needs persistence and wisdom when building relationships and understanding their current situation and needs. Also, farmers need to hear about the program more than once to be able to connect with AgrAbility staff: "Do not be discouraged because you'll hear "no" several times before they [farmers] start warming up to it [AgrAbility program] making contacts with them [farmers] and forming those relationships; it's real relationships that help."

The necessity of knowing farmers' culture and lifestyle was the third needed competency: "knowing the culture of the clients we serve and what they're comfortable with is important for people who work on our project, in which staff are trained on how to talk to them [farmers] based on their culture, lifestyles, and habit." Interviewees emphasized also that they should be aware of other agencies' rules, laws, and available resources to advocate for farmers with

disabilities and meet their needs: “You have to have a whole array of resources in your head. As you become close to these people [farmers], you build a relationship, and they may open up and talk to you about other needs.” Another competency raised by AgrAbility is keeping up with the latest agricultural trends, types of disabilities, and new research to improve farmers’ current situations and provide them with the best assistance. One interviewee explained, “Farmers’ conditions change; it can change very quickly for certain illnesses, by the time you’re trying to work through one solution that might not even be feasible anymore.”

Moreover, selecting the team who will represent AgrAbility to farmers with disabilities and talk to them is a key needed competency: “A key component of any successful AgrAbility project is to pick your team carefully, who can connect well with farmers and ranchers with disabilities, so they can make a quick connection.” Also, AgrAbility interviewees mentioned that case management skills are essential to track program participants’ progress and ensure they are on the right track: “We also give ourselves as case managers kind of a process and the deadline for checking in with them [farmers]; that’s monthly, quarterly, or weekly to ensure we are staying on top of the progress of their cases.” Being skilled in customizing the delivery of services and assistance to farmers with disabilities is the core of achieving each case’s needs, as raised by interviewees as an important competency: “We have, over the years, revised our product that goes to the farmer—the end goal changes based on the season and their health.”

Tracking the overall AgrAbility progress is essential, too, because it will present what the program is achieving based on its vision and goals: “We keep track of how many clients we serve and their outcomes based on the Extension model of evaluation, following that logic model that USDA has from the short-term all the whole way to the larger outcomes.”

The last competency is thinking about planning the program from a holistic approach perspective. In other words, one interviewee meant by the holistic concept to look at how the individual with a disability’s body function, what they need to help them function well, and consider the type of their vocation to serve them with a suitable solution: “I like our holistic approach of occupational therapy, how the body works, what the body needs to do, and then the farming perspective; really, it’s a team effort.”

Partnerships and Relationships with Several Entities

Interviewees reinforced that having solid relationships and partnerships contributes to raising funds, improving program accountability, and accommodating a higher number of farmers with disabilities’ needs. For example, Vocational Rehabilitation (VR) services are the primary federal funds that assist with purchasing assistive technology: “The VR here are the ones who have the federal funding to be able to buy the assistive technology if they can be persuaded that by helping this particular farmer, a farmer will be successful on the farm as a business.” Other significant partnerships were with Land Grant Universities, Agriculture Extension (to help reach out to farmers with disabilities and promote AgrAbility program), Independent Living Centers, Health Organizations (to refer AgrAbility services to patients with disabilities who need assistance with their farm vocations), and Easterseals (a nonprofit organization providing disability services):

We have more than one Land Grant University. We are representing our agricultural communities with that kind of diversity. We work with a Center for Independent Living

and Vocational Rehabilitation services. We work with nurses; we work with a variety of partners, bridging the agriculture and the disability communities together.

Some AgrAbility states offer internship opportunities to students who are occupational therapists to co-create services together. One interviewee said, “We work with occupational therapy students. We provide a one-week experience for them to learn about our program, and then we offer a 12-week experience, where they are working with clients with us, and they produce an end product.” The last highlighted partnership was at the national level, strengthening AgrAbility program states’ resources and services to improve accessibility: “On a national level, we shouldn't be operating in a vacuum; we should collaborate and develop publications or outreach efforts. So, we're [AgrAbility states] collaborating to create this database. Just we are trying to make the information more accessible.”

Securing Alternate Funding

AgrAbility states use different approaches to ensure program sustainability through alternate funding if the federal grant funding is limited or discontinued. An interviewee emphasized fundraising as an alternative source of funding to keep assisting farmers with disabilities with modified farm equipment when USDA fund is discontinued: “If I have somebody who needs something and can't find the funding, we have the 4-H and FFA clubs that are willing to help and do fundraisers.” Another an interviewee noted fundraising and partnering with other organizations so they still can support farmers with assistive technology: “We can't afford assistive technologies. So, we use outside resources. We have an assistive technology fund that we set up through Easterseals, and people can donate to that, so we do fundraise.” Also, sponsors' support is another way to sustain funds: “We cannot provide money directly for farmers to help implement recommendations. So, sustainability is one of the directives, but how can we create a sustainable program? So, we are trying to get sponsors to create some path to sustainability.” The last shared idea for securing funds was a return-on-investment evaluation of assistive technology purchases. One interviewee explained:

We want to do a little more research on the return-on-investment. I think it would be something that we could do more of right now. The quality-of-life survey helps us measure everyone we serve and how they've progressed. Still, it really helps to prove our effectiveness, especially to our funding partners, to have that return-on-investment.

Strategies For Promoting Social Justice

The theme includes outreach and engagement strategies that contribute to promoting social justice (i.e., inclusive outreach, access to resources, and engaging marginalized voices and needs). Outreach strategies focus on techniques to improve reaching overlooked and underserved people, different farming size, types of disabilities, farmer culture, etc. Engagement strategies focus on techniques to engage farmers with disabilities’ voices, needs, interests, and knowledge in the ongoing planning process.

Outreach Strategies

Interviewed AgrAbility states shared outreach strategies used in practice to increase and enhance efforts to reach farmers with disabilities and promote social justice (see Table 1).

Table 1

Outreach Strategies with Supported Quotes from Seven AgrAbility Interviewees

Outreach Strategies	Supported Quotes
1- Using outreach tools, such as phone calls, live chats, or surveys that match farmers' skills and literacy levels.	"It happens in various ways, depending upon the skills and tools that a particular farmer or rancher has and uses. Sometimes, our team members will talk with them over the telephone to line things up. Sometimes it'll be via Zoom, if they have broadband and know how to use it. We also send our quality-of-life survey."
2- Recognizing the languages, cultures, ethnicities, races, and types of disabilities of different target populations when offering information about the AgrAbility program through websites, brochures, organization referrals, and various events.	"Several service provider groups already target audiences who are Americans or migrant workers. So, we've translated health cards from English into Somali Bantu, or French Creole, offering that extra step of access to make them readily available." "We have different channels of outreach, and we do outreach at different events. We're trying to get many people from different backgrounds, from big farming to small farming operations to niche operations."
3- Considering farmers with disabilities' family members (called caregivers) to reach to farmer with disabilities.	"Some of our outreach methods involve reaching the spouses, caregivers, wives, or partners on the farm. Then they [caregivers] can nag [farmers with disabilities] by saying, "Hey, talk to AgrAbility."
4- Having a representative in the AgrAbility team to reach out to specific populations and share their needs, as well as expanding networks with farmers with disabilities through Extension County offices.	"We have the veteran's voice covered by one of our staff members, the veteran coordinator at a small farm outreach program." "We have an Extension person in each office, material available in each county offices, and we try to educate those providers about AgrAbility."

Engagement Strategies

Interviewees shared practical strategies for engaging the voices and needs of farmers with disabilities in the planning process (see Table 2).

Table 2*Engagement Strategies with Supported Quotes from Seven AgrAbility Interviewees*

Engagement Strategies	Supported Quotes
1- Ensuring transparency with farmers in planning processes, specifically regarding financial situations.	“We strictly explained that we're not here to prescribe something that will work. So, what we do is we tell them [farmers], “These are the resources that we can provide; We can show them a lot of different devices. We cannot purchase the devices, but different organizations might be able to help.”
2- Expanding assistance/services to engage and serve individuals with unseen disabilities, including psychological issues (e.g., depression or suicidal thoughts), Parkinson’s disease, and arthritis.	“If somebody loses a limb or has paralysis, they think AgrAbility is for them. However, the ones with Parkinson’s disease or arthritis don't always get those as being seen as AgrAbility can serve them, so we try to market more to those groups.”
3- Engaging overlooked populations, such as veterans, Native Americans, and Hispanics.	“We are currently trying to reach out to the Native American population, but there's a lot of education needed about being culturally appropriate when approaching those audiences. So, we are trying to find connections within those groups to educate ourselves and determine their needs.”
4- Using various communication methods to help engage farmers with disabilities in the planning process, such as visual demonstrations, translated materials, and customized information delivered to individuals with traumatic brain injuries or post-traumatic stress disorder.	“We had to modify the way our materials were printed and how we managed cases. We sent a list of many tasks for the individual to follow up on each month, but for somebody with a traumatic brain injury or post-traumatic stress disorder, this could be very overwhelming. So, we are breaking those down into smaller tasks; this is how we present the information to them.”
5- Engaging farmers’ voices and needs, incorporating principles of cultural humility.	“We practice cultural humility; we understand that we are by no means experts in their lives; they [farmers] are the experts. We are open to hearing what they say, so we let them do most of the talking. We experienced some of their work because I need to understand how hard they're working.”

Recognizing Challenges in the Planning Process

The interviewees raised seven challenges that influence developing a disability-inclusive program: lack of resources (people and time), disability stigma, cultural barriers, issues with USDA funds, and challenges related to vocational rehabilitation (VR) and funding for assistive technology. The first challenge is the shortage of AgrAbility staff members, which influences

their abilities to handle many cases that need assistance, and conduct on-site assessments, resulting in a backlog of cases:

We are sometimes busy with clients and have a bit of a list to work through. If we had more people to put on the task, we could serve more. We try to balance how many clients we have on the list with and how many people we have to work with them. We don't want to discourage people by getting them on the list than having them wait for a long time.

The second challenge is gathering all stakeholders, including farmers with disabilities, in the planning process is always a matter of time. Farmers with disabilities have busy schedules, so they sometimes step away from talking with AgrAbility:

Probably more of a timing issue since everyone's so busy. Farmers were willing to share; we had relationships, so it was not a challenge to make decisions or determine how much money we needed to spend on what kind of activities. Putting all the people together is always a time issue.

The third highlighted challenges are disability stigma among farmers and their reluctance to ask for help. Farmers with disabilities may not see losing a part of their body as a disability, and they may understand disability differently from others. One interviewee said:

I have found that people [farmers] don't generally willingly admit they have a disability if it's not obvious. There's a certain mentality or culture among farmers where they'll get the job done despite anything else, so they don't consider themselves as having a barrier. They don't readily or easily recognize that they need help. So many people do not self-report or say, 'Hey, I'd like to become a client.'

The fourth challenge is understanding farm culture and reaching to farmers. One interviewee emphasized:

Many of those cultures, especially the Native American ones, help each other very well. So, they see us [AgrAbility] as a government program, and they don't seek help from a government program; they seek help from within their community. They do a good job of helping each other, but we keep trying to reach out to those communities.

The fifth challenge is associated with the program accountability. AgrAbility has encountered challenges in using and maintaining USDA funds, specifically when the program is launched, due to the limited number of cases they reached. One Interviewee said:

When a program starts, it's hard to get people to know who we are, trust us, and to come to us. We've been around 24 years, and our first years were pretty low. We only had eight participants in our first year, and I was really worried that NIFA might pull the funding because we had so few.

The six challenge is related to the complicated process of working with VR systems and other agencies. Farmers with disabilities also often get confused and overwhelmed with documentation and paperwork process. One interviewee explained:

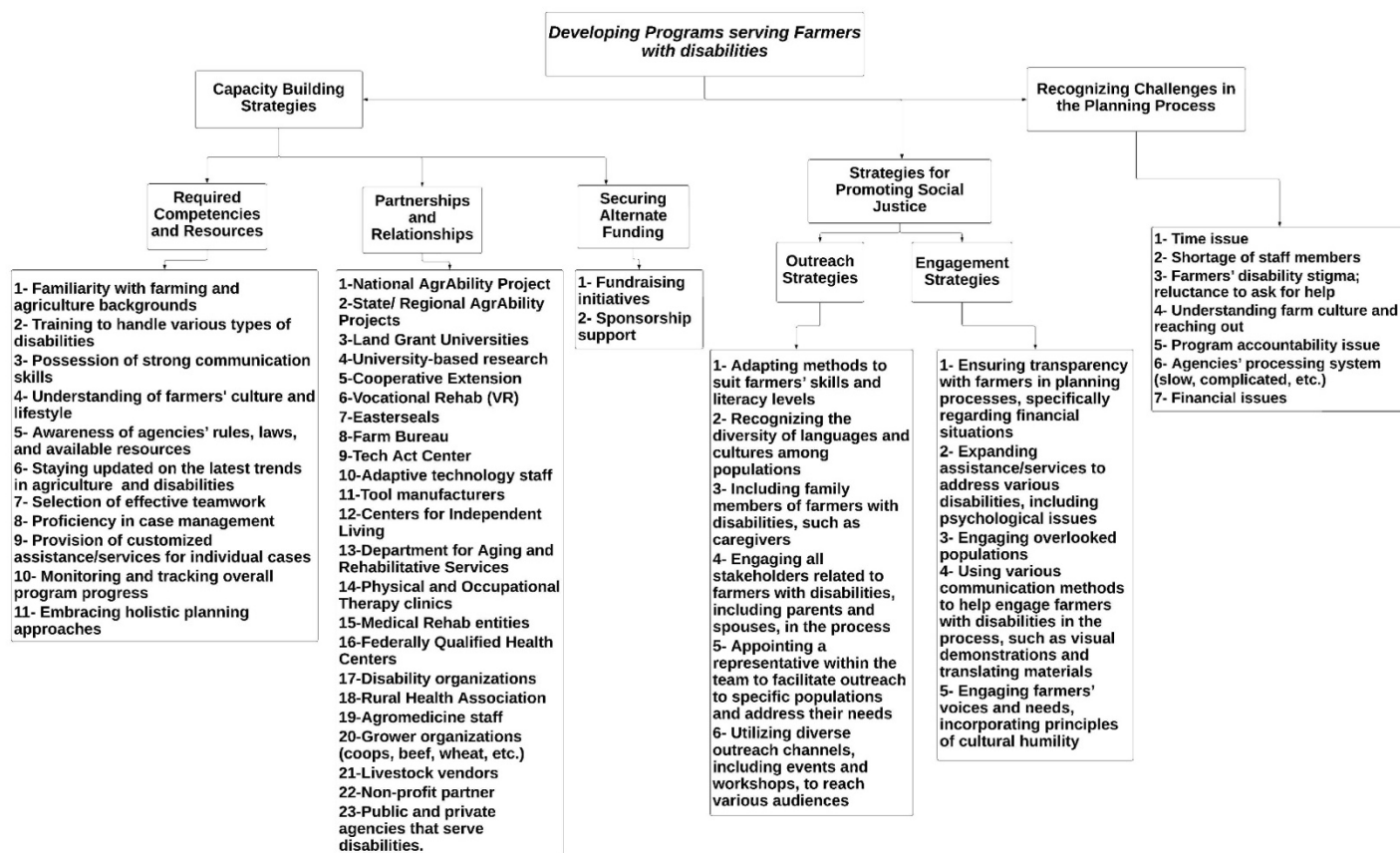
The Vocational Rehab system is not an easy system to work through. It takes a long time. VR asks for information to see if they [farmers] would be eligible, and sometimes the client is unwilling to provide info, like financial information, income, or medical histories. So, we get some hesitancy from the client about working with VR.

The last challenge is that funding for assistive technology and modified farm equipment is a significant barrier. One interview said:

It is often out of our control when we make recommendations to VR for funding, and they just sit on it, and it doesn't seem to be going anywhere. It may take years, and farmers are still waiting on their equipment. It is a big barrier for us. We don't want clients to feel that this organization [AgrAbility] doesn't provide what they say, even though we don't have control over whether VR will fund the equipment or not. That is a big hurdle.

Discussion

Roughly 19% of farmers and ranchers in the U.S. live with disabilities (Miller & Aherin, 2018). They experience difficulties performing their jobs efficiently and independently, ultimately leaving them behind, affecting their financial stability, excluding them from agriculture sector, and increasing their unemployment rates. Although previous scholarly works explored several factors that contribute to improving the professional and personal well-being of farmers and ranchers with disabilities, such as accessibility to assistive technology (Marinaci et al., 2023) and providing educational training and rehabilitation services (Fetsch et al., 2008; Osman & Peterson 2023), there is still a gap in the literature to understand the development of agricultural assistance programs with a disability-inclusive lens. Hence, the study aimed to explore the strategies employed in the development of AgrAbility, focusing on the social, political, and ethical domains, through three program development models used as a conceptual framework (the TOP Model, Cervero and Wilson's, and Sork's planning models). The lessons learned from interviewing seven AgrAbility states laid a foundational framework, including three areas: 1) capacity-building strategies, 2) strategies for promoting social justice, and (3) recognizing challenges in the planning process (see Figure 2).

Figure 2*A Framework for Developing a Disability-Inclusive Program from a Social Justice Lens*

The study findings have several practical implications. First, AgrAbility states shared that capacity building including 1) required competencies and resources, 2) partnerships and relationships with several entities, and 3) securing alternate funding, are the foundation of developing inclusive programs from social justice lens. When program planners are aware of and acknowledge the heterogeneity of farmers and ranchers with disabilities (i.e., types of disabilities, socio-cultural aspects, traditions, languages, values, interests, needs, farming jobs, behaviors, and lifestyle) (Genova et al., 2020), it helps them gain insights into these farmers' genuine needs. This awareness enables planners to customize assistance programs that help farmers perform their jobs efficiently and safely. It also allows planners to advocate for farmers with disabilities cases and needs with various agencies and funding sources, specifically for purchasing high-tech farm equipment. This ultimately improves their quality of life and promotes social justice (Mion et al., 2023).

Additionally, the findings show that developing a disability-inclusive program is an integrated, dynamic relationship between farmers with disabilities, program team members, and other entities, contributing to addressing more disability cases and securing funds, particularly for purchasing assistive technology or modified farm equipment to help continue farming. The findings align with previous research showing that AgrAbility relationships and partnerships

with different entities led to several outcomes: 1) partnership with VR has shifted attention to health disparities among rural communities living with disabilities by offering multifaced healthcare approaches (health care service provision and healthcare education) (Hunter et al., 2011), 2) partnership with other organizations has served as a source for introducing farmers with disabilities to potential farming career opportunities and other services (Stowell & Burnett, 2019), and 3) partnership with Land Grant Universities has improved experiential learning for students by helping them identify and solve various agricultural systems problems and create creative design solutions to improve farmers with disabilities' work, through an engineering design project class (Crosson et al., 2014). Developing a disability-inclusive program from social, political, and ethical perspectives requires program planners to be equipped to include and prioritize the voices, interests, and needs of farmers and ranchers with disabilities. It also involves embracing various service providers and funding resources. In addition, planners need to adopt "boundary-spanning partnerships that include various key knowledge network actors" (Lubell et al., 2014, p. 1100) to resolve the contemporary and complex challenges faced by agricultural workers with disabilities in their agriculture-related jobs.

Second, AgrAbility outreach and engagement strategies follow the notion of shifting the planning process from a top-down approach (authority) to a participatory (collective) to a demand-driven (customized) approach (Blum et al., 2020; Suvedi, & Kaplowitz, 2016). The AgrAbility demand-driven approach 1) acknowledges farmers with disabilities' voices, needs, and different types of disabilities, including but not limited to physical and psychological limitations, as a source of knowledge for developing relevant programs (Scott-Villiers & Oosterom, 2016), 2) involves farmers' families (i.e., caregivers) to learn more about their needs and voices, 3) hires representative within the AgrAbility team who could reach overlooked and underserved populations (Christen & Fetsch, 2008), and 4) uses cultural humility as an engagement approach in programming development that "open doors for meaningful relationships and partnerships between individuals of different cultural backgrounds" (Habashy & Cruz, 2021, p. 26).

Developing a program from a technical domain includes, but not limited to, "needs assessment, the educational, management, and political objectives, instructional design and implementation, administrative organization and operation, and formal and informal education strategies and curricula" (Franz, 2015, p. 8). However, Sork has depicted planners who are skilled only in the technical domain as being "on the 'surface' quite deliberately to suggest that a preoccupation of this domain overemphasized the craft of planning and neglects its artistry" (Sork, 2000, p. 185). Therefore, program planners must be knowledgeable about social, political, and ethical implications of each technical step to maintain the planning process in a democratic way (Cervero & Wilson 1994). Questions program planners can ask include: "who is not here, who should be, and how can we get them involved? What will happen to our credibility if we continue to ignore the advice we are getting from stakeholders? Is this action consistent with a commitment to social justice?" (Sork, 2000, p. 185-186). Farmers with disabilities could experience being powerlessness with less engagement in making decisions if their values, interests, and voices "could not be considered at all by society, service providers, and others" (Rocco, 2005, p. 1), leading to unequal power relations. Therefore, the findings suggest that program planners need to construct assistance programs by managing different representative interests and considering the ethical stance of "whose interests matter and then depends on political skills to legitimately negotiate these interests" (Cervero & Wilson, 1994, p. 258).

AgrAbility shared the challenges associated with developing a disability-inclusive program so that program planners will be aware of them to maintain social justice within the ongoing planning process. This finding is in line with Seevers's (1997) notion that planners need to consider social, historical, economic, educational, emotional, political, and personal factors that contribute to facilitating or inhibiting the nurturing of a social justice environment. Drawing on time issues and shortage of staff numbers, program planners must consider farmers' nature of farm work, time schedules, and available staff, to improve participation pattern and relationships with farmers with disabilities. Additionally, disability stigma and understanding farm cultures influence farmers with disabilities' decision to seek assistance from AgrAbility. The findings echoed other research that mentioned that the way we discuss the term "disability" with vulnerable communities could affect interactions, ultimately strengthening or hindering relationships with vulnerable populations (Kennedy & Minkler, 1998; Okoth & Wamalwa, 2022, Rocco, 2005; Zola, 1993). Hence, proper training is needed for program teams who will reach out to, contact, and promote assistance programs to farmers with disabilities.

AgrAbility has encountered challenges in using and maintaining USDA funds, specifically when the program is launched, due to the limited number of cases they reached. By considering several outreach and engagement approaches, it will ensure reaching a higher number of farmers with disabilities' who need assistance. Furthermore, this study, as have others (Beaulieu & Cordes, 2014; Franz, 2015; Opoku et al., 2019), highlighted the importance of tracking program progress to provide evidence that the program has an impact to maintain funding. AgrAbility mentioned that farmers with disabilities sometimes withdraw from working with other agencies, such as VR because of the heavy load of paperwork and its long process. However, those agencies (i.e., VR) play a key role in funding assistive technology and modified farm equipment. Given the complexity of VR agencies' processes (Acheampong et al., 2021), best practices and policies to facilitate the ongoing process between farmers and those agencies to ensure they are not left behind without assistance programs are needed (Griffiths et al., 2020).

Conclusion

The lessons learned from interviewing seven AgrAbility states provide a nuanced understanding of developing a disability-inclusive program, specifically focusing on three areas: 1) capacity-building strategies, 2) strategies for promoting social justice, and 3) recognizing challenges in the planning process. Also, the findings laid a foundational framework that could serve as a catalyst to answer the following question: "To what extent can the social, political, and ethical domains be addressed or enacted within the development of programs serving farmers with disabilities?"

Elucidating a common framework based on various states' approaches can serve as an initial source for other extension agents and program planners in other U.S. states and countries around the world that do not have AgrAbility and are interested in developing disability-inclusive programs. Ultimately, enhancing the quality of life for farmers with disabilities through inclusive-disability programs will contribute to improving their quality in agriculture-related jobs, employment rate and, in turn, increase economic growth. Lastly, the lessons learned will have potential applications in different contexts beyond programs serving farmers and ranchers with disabilities. Future studies need to investigate other programs serving farmers with disabilities in other countries to explore additional strategies for developing disability-inclusive

programs in practice. Another topic for future research is examining to what extent these strategies are applicable in other contexts focused on serving people with disabilities.

References

- Acheampong, E., Atta-Osei, G., Nadutey, A., Bredu-Darkwa, P., & Boateng, G. (2021). Challenges Associated with Vocational Rehabilitation for persons with disability in the Kumasi Metropolis of Ghana. *Disability, CBR & Inclusive Development*, 32(2), 88-103. <https://doi.org/10.47985/dcidj.416>.
- AgrAbility Project. (n.d.). <https://www.agrability.org/>
- Agyei-Okyerere, E., Nketsia, W., Opoku, M. P., Torgbenu, E. L., Alupo, B. A., & Odame, L. (2019). Sustainable employment opportunities for persons with disabilities in Ghana: Exploring perceptions and participation in agriculture. *Business Strategy & Development*, 2(2), 68-76. <https://doi.org/10.1002/bsd2.43>.
- Blum, M., Cofini, F., & Sulaiman, V. (2020). Agricultural Extension in transition worldwide: Policies and strategies for reform. Rome, FAO. <https://openknowledge.fao.org>
- Boone, E. J., Safrit, R. D., & Jones, J. (2002). Developing programs in adult education: A conceptual programming model. Waveland Press.
- Buckup, S. (2009). The price of exclusion: The economic consequences of excluding people with disabilities from the world of work. International Labour Organization. http://www.ilo.org/public/libdoc/ilo/2009/109B09_291_engl.pdf
- Cervero, R. M., & Wilson, A. L. (1994). The politics of responsibility: A theory of program planning practice for adult education. *Adult Education Quarterly*, 45(1), 249-268. <https://doi.org/10.1177/0741713694045001001>.
- Christen, C. T., & Fetsch, R. J. (2008). Colorado AgrAbility: enhancing the effectiveness of outreach efforts targeting farmers and ranchers with disabilities. *Journal of Applied Communications*, 92(1-2), 57-74. <https://doi.org/10.4148/1051-0834.1216>.
- Creswell, J. W., & Miller, D. L. (2000). Determining validity in qualitative inquiry. *Theory Into Practice*, 39(3), 124-131. https://doi.org/10.1207/s15430421tip3903_2.
- Crosson, K. M., Jepsen, S. D., McGuire, K., & Zeller, J. (2014). Incorporating AgrAbility projects into the University of Dayton first-year, service-learning engineering design course. *American Society for Engineering Education Annual Meeting*. Montreal, Quebec Canada July 13–July 16. <https://doi:10.13031/aim.20141914077>.
- Diaz, J., Gusto, C., Diehl, D. (2021). Overview of extension program planning models. UF/IFAS Electronic Data Information System. <https://edis.ifas.ufl.edu/publication/WC289>.
- Fetsch, R. J., & Turk, P. (2018). A quantitative assessment of the effectiveness of USDA's AgrAbility project. *Disability and Health Journal*, 11(2), 249-255. <https://doi.org/10.1016/j.dhjo.2017.10.004>.

- Field, W. E., & Jones, P. (2006). Disability in agriculture. In J. E. Lessenger (Ed.), *Agricultural Medicine*, (pp. 70–80). Springer. https://doi.org/10.1007/0-387-30105-4_7.
- Franz, N. K., Garst, B. A., & Gagnon, R. J. (2015). The Cooperative Extension program development model: Adapting to a changing context. *Journal of Human Sciences and Extension*, 3(2), 3. <https://doi.org/10.54718/CWEZ3223>.
- Garst, B. A., & McCawley, P. F. (2015). Solving problems, ensuring relevance, and facilitating change: The evolution of needs assessment within Cooperative Extension. *Journal of Human Sciences and Extension*, 3(2), 4. <https://doi.org/10.54718/FLSF2021>.
- Genova, A., Maccaroni, M., & Viganò, E. (2020). Social farming: Heterogeneity in social and agricultural relationships. *Sustainability*, 12(12), 4824. <https://doi.org/10.3390/su12124824>.
- Gorucu, S., Michael, J., & Chege, K. (2022). Nonfatal agricultural injuries treated in emergency departments: 2015-2019. *Journal of Agromedicine*, 27(1), 41-50. <https://doi.org/10.1080/1059924X.2021.1913271>.
- Griffiths, A., Bechange, S., Loryman, H., Iga, C., & Schmidt, E. (2020). How do legal and policy frameworks support employment of people with disabilities in Uganda? Findings from a qualitative policy analysis study. *Journal of International Development*, 32(8), 1360-1378. <https://doi.org/10.1002/jid.3508>.
- Gutenbrunner, C., & Nugraha, B. (2018). Responding to the world health organization global disability action plan in Egypt: A technical consultation to develop a national disability, health and rehabilitation plan. *Journal of Rehabilitation Medicine*, 50, 333–337. <https://doi.org/10.2340/16501977-2307>.
- Habashy, N. and Cruz, L. (2021). Bowing down and standing up: Towards a pedagogy of cultural humility. *International Journal of Development Education and Global Learning*, 13(1), 16–31. <https://doi.org/10.14324/IJDEGL.13.1.02>.
- Hamm, K. E., Field, W. E., Jones, P. J., Wolfe, A., & Olson, E. (2012). Twenty years of AgrAbility: A retrospective forum. *Journal of Agromedicine*, 17(4), 410-414. <https://doi.org/10.1080/1059924X.2012.713844>.
- Hancock, J. (2008). Kentucky AgrAbility: Helping disabled farmers return to the land. *Journal of Agromedicine*, 5(1), 35–43. https://doi.org/10.1300/J096v05n01_05.
- Hunter, E. G., Hancock, J., Weber, C., & Simon, M. (2011). Underserved farmers with disabilities: Designing an AgrAbility program to address health disparities. *Journal of Agromedicine*, 16(2), 99-105. <https://doi.org/10.1080/1059924X.2011.554767>.
- International Disability Alliance. (2018). Disability and food security: An unfinished policy agenda. <https://www.internationaldisabilityalliance.org/>

- Jain, R., Meena, M. L., & Dangayach, G. S. (2018). Prevalence and risk factors of musculoskeletal disorders among farmers involved in manual farm operations. *International Journal of Occupational and Environmental Health*, 1-6. <https://doi.org/10.1080/10773525.2018.1547507>.
- Li, S., Raza, M. M. S., & Issa, S. (2024). Agricultural injury surveillance in the United States and Canada: a systematic literature review. *Journal of Agromedicine*, 29(2), 122-135. <https://doi.org/10.1080/1059924X.2024.2304699>
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Sage.
- Mactaggart, I., Banks, L. M., Kuper, H., Murthy, G. V. S., Sagar, J., Oye, J., & Polack, S. (2018). Livelihood opportunities amongst adults with and without disabilities in Cameroon and India: A Case control study. *PloS One*, 13(4), e0194105. <https://doi.org/10.1371/journal.pone.0194105>
- Marinaci, T., Russo, C., Savarese, G., Stornaiuolo, G., Faiella, F., Carpinelli, L., & Mollo, M. (2023). An inclusive workplace approach to disability through assistive technologies: A systematic review and thematic analysis of the literature. *Societies*, 13(11), 231. <https://doi.org/10.3390/soc13110231>
- Miller, C. D., & Aherin, R. A. (2018). The prevalence of disabilities in the US farm population. *Journal of Agricultural Safety and Health*, 24(4), 243-260. 3 <https://doi.org/10.13031/jash.12934>
- Mion, G., Baratta, R., Bonfanti, A., & Baroni, S. (2023). Drivers of social innovation in disability services for inclusion: A focus on social farming in nonprofit organizations. *The TQM Journal*, 35(8), 2141-2161. <https://doi.org/10.1108/TQM-05-2022-0153>
- National Council on Disability. (2023). 2023 Progress Report: Toward Economic Security: The Impact of Income and Asset Limits on People with Disabilities. <https://www.ncd.gov/report/2023-progress-report-toward-economic-security-the-impact-of-income-and-asset-limits-on-people-with-disabilities/>
- News Bank. (2016). Numerous employment barriers for people with disabilities in developing countries. <https://www.worldbank.org/en/news/press-release/2016/06/07/world-bank-partners-with-once-foundation-to-advance-inclusion-of-persons-with-disabilities>
- Okoth, N., & Wamalwa, F. (2022). Factors influencing persons with disability participation in socioeconomic development in seme sub-county, Kenya. *Journal of Poverty, Investment and Development*, 7(1), 44-73. <https://doi.org/10.47604/jpid.1670>
- Opoku, M. P., Nketsia, W., Agyei-Okyere, E., & Mprah, W. K. (2019). Extending social protection to persons with disabilities: Exploring the accessibility and the impact of the Disability Fund on the lives of persons with disabilities in Ghana. *Global Social Policy*, 19(3), 225-245. <https://doi.org/10.1177/1468018118818275>

- Osman, N., & Peterson, D. J. (2023). Exploring assistive technology influences on Kentucky AgrAbility program recipients' work life experiences. In J. McClinton & A. Hernandez (Eds.), *Qualitative research for diverse and underserved communities* (pp. 175-188). Information Age Publishing.
- Rocco, T. (2005). The invisible people: Disability, diversity, and issues of power in adult education. <https://scholarworks.iupui.edu/bitstream/handle/1805/414/Rocco+T+.pdf?sequence=1>
- Rockwell, K., & Bennett, C. (2004). Targeting outcomes of programs: A hierarchy for targeting outcomes and evaluating their achievement. Faculty Publications: Agricultural Leadership, Education & Communication Department, 48, http://digitalcommons.unl.edu/aglecf_acpub/48
- Rodger, S. A., de Jonge, D. M., & Driscoll, M. (2001). Factors that prevent or assist the integration of assistive technology into the workplace for people with spinal cord injuries: Perspectives of the users and their employers and co-workers. *Journal of Vocational Rehabilitation*, 16(1), 53–66. <https://espace.library.uq.edu.au/view/UQ:58175>
- Sango, P. N., Bello, M., Deveau, R., Gager, K., Boateng, B., Ahmed, H. K., & Azam, M. N. (2022). Exploring the role and lived experiences of people with disabilities working in the agricultural sector in northern Nigeria. *African Journal of Disability*, 11, 897. https://hdl.handle.net/10520/ejc-ajdis_v11_i1_a897.
- Seevers, B. (1997). *Education through cooperative extension*. Delmar Pub.
- Scott-Villiers, P., & Oosterom, M. (2016). Power, poverty and inequality. *IDS Bulletin Report*. 47(5), 1-10. Report. <https://hdl.handle.net/20.500.12413/12673>.
- Sork, T. J. (2000). Planning educational programs. *Handbook of adult and continuing education*, 2. Wiley. <https://www.wiley.com/en-ae/Handbook+of+Adult+and+Continuing+Education%2C+New+Edition-p-9780470907481>
- Stowell, D. R., & Burnett, A. (2019). Promoting the Profession of Horticultural Therapy through Partnerships. *Journal of Therapeutic Horticulture*, 29(1). <https://www.ahta.org/journal-of-therapeutic-horticulture-29-1---2019>.
- Suvedi, M., & Kaplowitz, M. D. (2016). What every extension worker should know: Core competency handbook. Michigan State University, Department of Community Sustainability. https://meas.illinois.edu/wp-content/uploads/2015/04/MEAS-2016-Extension-Handbook-Suvedi-Kaplowitz-2016_02_15.pdf.
- Thomas, D. R. (2006). A general inductive approach for analyzing qualitative evaluation data. *American Journal of Evaluation*, 27(2), 237-246. <https://doi.org/10.1177/1098214005283748>.

- Tinta, N., & Kolanisi, U. (2023). Overcoming barriers for people with disabilities participating in income-generating activities: A proposed development framework. *African Journal of Disability*, 12, 1133. https://hdl.handle.net/10520/ejc-ajdis_v12_n1_a1133.
- U.S. Department of Agriculture Economic Research Service. (2023). Ag and food sectors and the economy. <https://www.ers.usda.gov/data-products/ag-and-food-statistics-charting-the-essentials/ag-and-food-sectors-and-the-economy/>
- Vocational Rehabilitation funding formula: Options for improving equity in state grants and consideration for Performance Incentives, 2008
<https://www.gao.gov/assets/300/296357.pdf>.
- Vocational Rehabilitation program federal regulations, Title 34 C.F.R. Part 361.42 (2002).
<https://www.govinfo.gov/content/pkg/CFR-2002-title34-vol2/pdf/CFR-2002-title34-vol2-sec361-42.pdf>
- Wilbanks, S. R., & Ivankova, N. V. (2015). Exploring factors facilitating adults with spinal cord injury rejoining the workforce: A pilot study. *Disability and Rehabilitation*, 37(9), 739–749. <https://doi.org/10.3109/09638288.2014.938177>.
- World Bank. (2023). Disability. The World Bank. <https://www.worldbank.org/en/topic/disability>