Accessibility of Community Resources for individuals with Mobility Impairments

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Measuring the accessibility of a door often entails no more than the ability to operate a tape measure; however, measuring the accessibility of a community means defining accessibility for the population, discerning how individuals participate or would like to participate in the community, discovering availability of resources in the community, detecting community knowledge of accessible resources, and, once again, operating a tape measure. For individuals with mobility impairments who live in the community, measurements of accessibility translate from check marks and numeric values to opportunities and options, or lack thereof. Thus, knowing the accessibility of available community resources can play a crucial role in community participation for individuals with mobility impairments. Unfortunately, little research exists on the availability and knowledge of accessible community resources and the impact of these resources on community participation.

While past literature documents the physical accessibility of a location or the general participation of individuals with mobility impairments in the community, the bridge between the two, looking at participation as influenced by the overall accessibility of the community, still awaits construction. A study by Stark et al. (2007) focused on measuring the physical accessibility of specific locations using the Community Health Environment Checklist (CHEC). This study stands out from other environmental barriers studies, because instead of denoting presence or absence of accessibility features, the CHEC quantifies the physical features of a building by actually recording the physical characteristics of the environment and scoring the presence or absence of different features according to a ranking system developed through focus groups of individuals
with mobility impairments. Incorporating the opinions of individuals with mobility impairments helps to define the accessibility needs of the population. However, while the CHEC accounts for how physical barriers effect participation at a specific site, the assessment does not look at how availability of accessible sites impact overall community participation. The CHEC evaluates the receptivity of physical environment, which plays a critical role in enabling individuals with mobility impairments to interact in the community; however, to thoroughly analyze how community accessibility impacts participation, discussion must include how and where individuals with mobility impairments wish to participate and what factors facilitate or limit that participation.

Gray et al. (2006) created a Participation Survey for Individuals with Mobility Impairment (PARTS/M) to gather information on participation in major life activities. The survey covers 20 different areas of major life activities, including 8 possible domains involving community participation: leaving the home, active recreation activities, leisure activities, taking vacations, socializing, taking vacations, religious activities, community activities (community board meetings/communicating with elected official), employment, and volunteering. Past measurements focus on function within a clinical setting and disregard the impact of assistive technology or personal attendants on functional capacity. The PARTS/M measures enacted function in the community setting to look at what individuals with mobility limitations do in actual lived environments. Based on focus groups of individuals with mobility impairments, Gray et al. established four themes for questioning participation limitations: time, physical limitations (illness, impairment, pain, and fatigue), evaluative aspects (choice and satisfaction), and the required amount of support for participation (both from other individuals and assistive technology). While
the PARTS provides an important link to evaluating how individuals participate, the assessment faces some limitations in the information gathered based on only having 20 domains of participation and only observing 4 themes of limiting factors. The PARTS/M also succeeds at evaluating what an individual does, but not where the activity occurs or how the individual gets to the destination.

Carpenter et al. (2007) take a more global, though less standardized approach to evaluating participation in the community. Similar to Gray et al., Carpenter et al. began to narrow the focus of the participation survey by using qualitative data from individuals with spinal cord injury to create the final version of the mail-out survey. After reviewing responses from 357 individuals with spinal cord injury living in the community of British Columbia, Carpenter et al., like Gray et al., discovered that facilitators and barriers to participation consisted of more than just wide doorways and entrance ramps. Carpenter et al. summarized the supports into 4 themes: supportive family member and friends (35%), availability of transportation (22%), specialized or adapted equipment (20%), and clubs or advocacy organizations (7%). Contrastingly, poor health or illness, physical limitations in functioning, accessibility issues, lack of funding, and poor availability of transportation came up as limitations to social participation. As transportation emerged as both a facilitator and barrier to participation, a clear distinction in satisfaction between individuals owning cars and those not owning cars became apparent. Vehicle owners reported significantly higher mean satisfaction with transportation than non-vehicle owners. Individuals owning vehicles reported monitoring of accessible parking spaces, availability of full service gas stations, and more convenient accessible parking spaces would increase satisfaction in transportation. However, non-vehicle owners thought
satisfaction would increase with availability of HandyDART (accessible public transport system in British Columbia), convenient bus routes, and monitoring of accessible parking spaces. All respondents expressed satisfaction with community building access; however, availability of designated accessible parking emerged, once again, as an area for improvement. Answers to questions on areas of participation showed a wide variety of interests including: visiting or going out with family or friends (71%), attending social gatherings or events (37%), engaging in physical activity (36%), volunteering (16%), and going to the movies or theater (14%). Thus, Carpenter et al. contribute three significant insights into community participation of individuals with spinal cord injury.

(1) Supportive families or social networks and available transportation, as well as adaptive equipment and advocacy organizations, facilitate community participation, while poor health, physical limitations, environmental accessibility issues, lack of funding and poor availability of transportation can limit participation for individuals with spinal cord injury.

(2) Mode of transportation greatly impacts the facilitators/barrier to and satisfaction with community participation.

(3) Individuals with mobility impairments have a variety of interests for participation. Thus, ensuring a community’s accessibility encourages participation of individuals with spinal cord injury means a variety of resources must be accessible. Though Carpenter et al. thoroughly examine how facilitators/barriers impact community participation, the key component of how knowledge of accessible resources impacts participation once again gets overlooked.
The need for gathering information can be seen in Cox et al.’s 2001 study of the perceived needs of individuals with spinal cord injury living in the community. Of the 29 items ranked on a need level by participants, the five items receiving the highest frequency of responses indicating some level of unmet need exists included: Physical changes (65% affirmed an unmet need exists), ongoing education (48%), fitness and exercise (46%), transport (44%), and work issues (44%). When asked to identify the two or three most significant barriers to meeting the needs, 81% of participants identified limited local expert knowledge, 56% chose inadequate funding, and 31% indicated complicated process/service fragmentation as barriers to getting needs met. Cox et al. feel that these unmet needs of individuals with spinal cord injury can best be met by a “whole-of-life follow-up by a multidisciplinary outreach team of specialists”.

Gontkovsky et al. (2007) found similar life-long needs of individuals with spinal cord injury. This survey study of the perceived information needs of individuals with spinal cord injury living in the community shows that even years post-injury, individuals still feel that information needs go unmet. Part of the acute rehabilitation process includes exposing patients to new information and preparing both patients and families for the paradigm shift awaiting them upon reintegration into the community and individuals realize the impact of spinal cord injury on participation. However, as individuals with spinal cord injury transition back into the community, resources and opportunities to accessing needed information become limited. The study by Gontkovsky et al. evaluated types of needed information and number of identified categories/domains of needed information. Gontkovsky et al. found that each of the 23 information domains received confirmation of an existing need from at least 16% of the subjects, however, 6
of the 23 domains received over 50% recognition as areas of needed information: Spinal cord injury and aging (73%), research on spinal cord injury (72%), community resources for financial aid (66%), spinal cord injury educational information (63%), aid in obtaining supplies and equipment (56%), and exercise programs (54%). This study shows that even as individuals with spinal cord injury re-enter the community the need for information on available resources exists. Though Gontkovsky et al. provide strong support for continuing spinal cord injury education after rehabilitation; the study fails to show how information needs impact participation.

Past research has formed a strong foundation for looking at the availability and knowledge of accessible community resources and the impact of these resources on community participation. The CHEC has provided an assessment for evaluating physical accessibility of a building, the PARTS offers guidance on how individuals with mobility impairments hope to utilize the community, and research by Carpenter et al., Cox et al., and Gontkovsky et al. create a pool of literature identifying facilitators and barriers to community participation and the continuing need for information to eliminate the barriers and acknowledge the facilitators of community participation for individuals with mobility impairments. However, none of the above articles provide an actual framework for approaching the measurement and documentation of available, accessible resources and how those resources impact participation.

The original challenge to examine the accessible community resources and how those resources impact participation arose from the idea that disability results not from spinal cord injury, but from an environment unable to meet the needs of individuals that differ from the average population. This basic concept forms the basis of many theories.
For example, DeJong (1979) offers the Independent Living paradigm as a replacement for the rehabilitation paradigm primarily held in the past.

The IL paradigm suggests that disability expresses a problem rooted in the environment, not in the individual as assumed in the rehabilitation model. Under the IL paradigm, treatment aims are directed towards correcting environmental barriers through advocacy, peer counseling, and self-help. The IL paradigm shares Trieschmann’s theory of causation, which depicts behaviors as the outcome of person, organic, and environmental variables interacting in a temporal framework. Changes in behavior can be effected by treatment of any of the three variables. However, the IL movement primarily serves as an advocacy and social movement. Four major societal trends have influenced the IL movement: consumerism, self-help programs, demedicalization, and deinstitutionalization. Consumerism impacts the role individuals with disability play in the rehabilitation process and gives power back to the consumer. The self-help trend encourages persons with disabilities to seek alternate care or self-management of health issues. Demedicalization follows with the IL theory and steps away from the medical model to argue that disability is not a sickness that requires curing. Finally, deinstitutionalization along with mainstreaming allows for the “dignity of risk” previously denied individuals living in the dependent setting of an institution. Dignity of risk involves not only allowing individuals with disabilities to contribute to legislation and decisions impacting the disability population, but also opening up a variety of opportunities for participation through accessible communities. Thus, the IL movement supports effecting participation by addressing environmental factors, however, the paradigm offers no insight into measuring, correcting, or informing consumers of barriers
to community resources other than having individuals with mobility impairments advocate for equal access.

The International Classification of Functioning, Disability, and Health (ICF) also emphasizes the importance of environmental factors on disability. Unlike the traditional International Classification of Impairment, Disability, and Handicap (ICIDH), that sees disability as arising solely from the functional loss due to an impairment, the ICF stems from the social model and describes disability as a limitation in functional level arising from inadequate interactions between personal and environmental factors. Gray et al. refer to function as evaluated under the ICF as ‘within skin’ capacity and function as measured free of context under the ICIDH as ‘naked’ person’s capacity. Framing disability in a functional as opposed to structural capacity allows therapists to measure disability by degrees of lost function as opposed to degrees of structural change. Doing so helps to account for individuals who function at high levels with the assistance of technology, even though physically, the individual might appear limited. Using the ICF as a framework, the construct of community participation depends on both the personal factors of body structure and function, as well as the contextual factors of physical, social, and political environment that support or limit participation. Personal contextual factors also impact participation under this model. The ICF can even account for the magnitude of impairment or support of participation offered by different domains. Thus measurements under the ICF focus on enacted function, as described by Glass (1998).

Glass defines three “tenses”, or approaches to evaluation, of function and discusses how discrepancies between the three tenses impact understanding of functional status in older adults. The hypothetical tense forms a foundation on the disability model
and uses self-report to collect data on the expected capability of an individual. The experimental tense collects data through simulated activities in a clinical setting and, thus, reports capacity to function, but negates the impact of environment and context on performance. The enacted tense, however, collects data on an individual’s function in the home or “real world” context. Measurements under the enacted tense include questions of frequency of participation or observations of performance in the natural or home environment. An example of enacted tense measurements following the ICF framework can be seen in Gray et al.’s PARTS/M.

Following the ICF concept that context influences participation, the PARTS/M not only asks enacted function questions of how frequently participation in an activity occurs, but also inquires about the extent to which individuals use assistance from technology or another person to participate. The importance of questioning level of assistance comes from the idea that an individual can still successfully participate, even if using assistance to do so. Unlike the ICIDH, the ICF acknowledges assistive technology as simply a facilitator to participation, thus measurements working under the ICF framework collect information on required assistance not to show a lack of functional capacity, but to show facilitators to successful participation.

Though instruments, such as the PARTS/M use the theoretical principles of the ICF to examine how the person/environment interaction facilitates or limits participation in the community, the ICF still faces common criticism of narrow applicability. Many critics feel the ICF retains some rough edges that require further thought and varnish before practices and research can implement the classification. This especially holds truth in community and environmental modifications. The influence of environmental
facilitators and barriers remains vague and subjective under the guidelines of the ICF. “Environmental factors’ influence should be better explained and operationalised” (Fougeyrollas, 2006). The CHEC offers preliminary research into environmental measures based on the social model and ICF by using input of individuals with mobility impairments to rank facilitators and barriers of accessibility based on personal experience. Thus, the CHEC employs both person factors and environmental factors to look at participation in a community. However, specific environmental characteristics came from focus groups, not the classification, once again showing how ICF theory offers strong reasoning, but ICF classification remains too vague to utilize in practice. The basic theory of the ICF supports the idea that availability and knowledge of community resources can encourage community participation for individuals with mobility impairments.

Previous to the CHEC, environmental measures mainly reviewed a building’s compliance with US mandated accessibility standards. US legislation such as the Architectural Barriers Act of 1968, Americans with Disabilities Act of 1990, and the 2001 Rehabilitation Services Administration have lead to changes in accessibility of both public and private spaces as discussed in Bricout’s 2003 article. These legislative guidelines include items considered necessary for individuals with disabilities to access a building and participate in services provided. However, the ADA, which currently guides accessibility standards, only applies to public spaces and only requires implementing “reasonable accommodations”. Thus, the ADA often receives criticism as inadequately providing equitable physical access for individuals with disabilities and the Americans with Disabilities Act Accessibility Guidelines (ADAAG) often receives
criticism for recording only the minimum of necessary accessibility features. While this piece of legislation has made great strides towards full participation for the individuals with disability in community participation, a large gap remains between ADA compliance and comfortable accessibility for individuals with disabilities. From this gap a need has arisen for measurements to assess how specific physical and social barriers impact availability and quality of community participation for individuals with disabilities.

Church & Marston (2002) propose a more global approach to accessibility as a theory to fill that gap. The ADAAG centers on standards-based accessibility. Church & Marston feel the absoluteness of standards-based evaluations, such as the ADAAG, simply record presence or absence and not the quality or quantity of accessible features. For example, compliance with the ADA requires at least one accessible entrance. Thus, the ADAAG only records absolute access (whether an accessible entrance exists), not whether such an entrance offers an equitable solution. In fact, under the ADAAG the presence of two, accessible entrances, instead of just one, would not increase the value of accessibility into a building, for there would still exist “at least one accessible entrance” – absolute. Church & Marston present non-absolute approaches to accessibility measurement in the context of community accessibility for individuals with mobility impairment. Agreeing with Weibull’s 1976 characterization of accessibility measures, Church & Marston say that “an accessibility measure estimates the level of access to some type of activity from a starting location or home location to one or multiple locations of that activity given a travel mode, distance, time, and cost constraints”. This more global definition of accessibility encourages an approach “sensitive to both the
number of routes and the values of each access route provided”. Besides the absolute access approach of the ADAAG, Church & Marston discuss and provide formulas for six accessibility measurement approaches: counting, total sums of distances, closest available, gross interaction potential, probabilistic choice, and net and maximum benefit.

The counting approach simply counts the number of locations at which a specific activity can be found within pre-set parameters (distance, time of travel, cost of travel, etc.). This counting approach calculates accessibility as the sum of all opportunities for the activity at locations accessible to an individual. An important aspect of the counting approach includes defining whether a location can be accessed based on the specific accessibility needs on the individual. Higher end values for the equation mean better accessibility for an individual trying to participate in a specific activity.

The second approach, total sum of distances, adds to the basic counting approach by looking at the total distances of all possible accessible locations of an activity relative to the starting location of the individual. Similarly, the closest available approach looks at the distance from an individual or starting point to the closest accessible location offering a specific activity or service. The closest available approach often applies to public services that need to get to an individual fast in an emergency situation. In both the total sum of distances and the closest available approaches, equations seek out the lowest number to represent higher accessibility.

Church & Marston introduce the gross interaction potential as an extension on the gravity model which “estimates interaction in terms of attractiveness of an activity at a given location and distance”. The gravity model correlates gross accessibility with an increase in the number of opportunities for participation in an activity. Church &
Marston adapted the gravity model to include consideration for the type of activity and the personal attributes of the individual. Personal attributes can then get further categorized into subgroups, so that accessibility for an entire subgroup (i.e.: those individuals relying on public transportation) can be estimated with the gross interaction potential model.

The probabilistic choice and net benefits approaches add the perspective of consumer preference into the equation of accessibility. Probabilistic choice estimates the probability that a consumer will travel to a certain location for a certain activity when traveling via a certain mode of transportation. This probability can be calculated by dividing the accessibility potential of a site by the sum of all available location’s accessibility potential for an activity. Included in the accessibility potential of a certain site are the distance, the physical accessibility, and even the social accessibility. The net benefit approach measures accessibility in terms of how an individual might maximize the net benefits or consumer surplus by attending a specific site.

Church & Marston explain how all of the approaches to accessibility can also calculate accessibility for multiple activities, thus providing a Total Gross Accessibility for an individual in a community. Church & Marston’s main argument states that accessibility should not only be driven by compliance with ADA measures, but also by the scoring of a combination of absolute and relative access measures.

Foundations for Church & Marston’s concept of relative access measures come from literature discussing the different accessibility experienced by individuals with different abilities. The six alternative approaches discussed in Church & Marston’s article are driven by researchers that could not account for accessibility limitations with
the traditional standards-based assessments. Studies such as Church & Marston’s or Golledge’s (1994) depict the inequities faced by individuals with mobility impairments trying to access the same location as individuals without mobility impairments when standards-based assessments alone determine accessibility of a site. Church & Marston say that “If a competitive route exists between an origin and destination that provides access to people with disabilities, then those people face no additional travel penalties as compared to the typical traveler”. Yet, competitive routes rarely exist. Thus, Church & Marston feel that relative access measures must be used alongside standards-based assessments in order to get a true measure of the accessibility of a site or community.

Expanding on the independent living models or ICF, the idea of relative accessibility not only demonstrates disability as functional limitations arising from an inadequate environment/person interaction, but also demonstrates how accessibility actually results as a choice based on multiple factors including the physical, temporal, societal, and social environments of a specific location and whether those factors meet the needs of the individual. In fact, Church & Marston provide a definition of accessibility that becomes quantifiably and empirically different for individuals based on personal attributes. Using Church & Marston’s definition, one cannot ignore the gap resulting from standards-based assessments of an individual’s relative world, nor can one attempt to assess the community without input from individuals with mobility impairments, because how can accessibility be measured without examining the needs of the individual. To evaluate the accessibility of a community using Church & Marston’s relative accessibility approach, the population served must be examined to determine
needs and preferences for accessibility and the physical environment must be assessed to
determine availability of accessible community resources and routes of travel.

Liu & Zhu (2004) set up a similar set of accessibility assessment criteria, even
though the target population did not consist of individuals with disabilities. Though Liu
& Zhu approach accessibility from a city planning perspective, the theory behind
accessibility can easily generalize to the disability population and Church & Marston’s
theory of relative accessibility measures strongly correlates with the four step process of
accessibility analysis proposed by Liu & Zhu.

The first step, concept formulation, requires defining accessibility according to
the purpose of the analysis and relevance to the investigator. Measure selection and
specification, the second step in the process of accessibility analysis includes seven
aspects of specification: definition of spatial unit (i.e.: zone v. building), demographics of
the group of users (i.e.: needs for accessibility), type of opportunity or activity (i.e.:
employment opportunity v. recreation), travel mode (i.e.: bus v. personal car), definition
of origin and destination (define starting/home point and final/stopping point),
attractiveness of an opportunity (attractiveness should be defined by characteristics
important to the activity), and travel impedance (spatial or temporal separation of origin
and destination). The third step in accessibility analysis should be accessibility
measurement where data undergo analysis and calculations occur to produce overall
accessibility score. The final step should be analysis, interpretation, and evaluation. In
this final step scores and data get translated into useful information and sometimes visual
representation. Utilizing all four steps creates an integrated approach to accessibility
analysis. A key component in Liu & Zhu’s integrated process involves the final step of interpretation and evaluation.

Liu & Zhu’s process can add both a protocol formula and a visual/interpretation component to Church & Marston’s relative accessibility measures. The focus of Liu & Zhu’s final step in accessibility analysis directs accessibility researchers toward use of Geographical Information Systems (GIS) to create a visual representation and integrated analysis of community accessibility. Liu & Zhu propose a framework for integrated use of GIS with travel impedance and accessibility measures, specifically supporting the ACCESS application of GIS as a tool for integrated approach to GIS accessibility analysis.

Liu & Zhu describe how ACCESS, built within the ArcView GIS environment (Version 3.2), actually mimics the proposed four step process of accessibility measurement by interoperating with other Arc View extensions in the functions carried out by the program. In fact, the ArcView program with ACCESS provides a drop-down menu with all the options necessary to carry out the four step process of accessibility analysis. The ACCESS application to GIS integrates four groups of functions: data preparation, OD matrix formulation, accessibility measurement, and visualization. The data preparation group helps to obtain centroids, which serve as centralized points within a zone or area that serve as representations of origins or destinations. Data preparation also locates road networks closest to the centroids for calculating distance between origin and destination based on transportation criterion. OD matrices represent the travel impedance or spatial separation between each origin and destination. The OD matrix formulation group of ACCESS helps to create the OD matrices based on the closest
transportation network meeting pre-set criterion (found in Data Preparation group). ACCESS also calculates time and cost of OD matrix formulation for ACCESS users planning new transportation networks. Accessibility measurement groups provide different accessibility measures for both specific transportation modes and cumulative transportation opportunities. The visualization function of ACCESS provides a location profile chart and cumulative profile chart. Combining all four functions of ACCESS, produces the integrated approach to GIS use that Liu & Zhu discuss as the process to accessibility analysis.

Using ACCESS, Zhu & Liu present accessibility analysis of public transportation to a local shopping center in Singapore. The area of observation divides into 265 five hectare hexagons that serve as spatial units for the analysis. Eight shopping centers of equal attractiveness and quality exist within the parameters of the study area. The study looks at transportation routes of bus-to-bus and bus-to-Light Rapid Transit (LRT), but does not account for wait time on platforms. The data preparation function of ACCESS produced information on the distance between shopping centers and the closest transportation network, in this case, the closest bus stop. Centroid points representing shopping center location within hexagons also developed in the data preparation stage. An origin destination (OD) matrix was created in the OD matrix formulation of the ACCESS program. The accessibility measurement function of ACCESS used information from the data preparation stage and OD matrix to compare accessibility with and without LRT to observe the impact of LRT on accessibility. Charts produced with the visualization function of ACCESS helped Zhu and Liu to demonstrate how certain
areas of Singapore have become more accessible thanks to the LRT, while other areas require still more improvements.

Applying the ACCESS program of GIS to evaluations of relative accessibility for individuals with mobility impairments offers the possibility of creating a layered map of available community resources that could be used to analyze overall community accessibility and inform individuals of local, accessible resources. Using the concepts of both Church & Marston and Liu & Zhu, maps could be created that focus on accessible resources and travel routes for individuals with mobility impairments living within specific communities. This could serve as an important tool for city planners, occupational therapists, individuals reintegrating into the community following injury, or even individuals with mobility impairments traveling to a new area. Knowing the accessible community resources and routes of travel expands available options and opportunities for participation. The visual guide of accessible resources can also guide community intervention as areas of poor resources show up with layering of travel, resources, and population density. GIS can even help show correlations between different characteristics of communities (i.e.: available resources and community health).

Pearce et al. (2006) feel that by reducing the time and financial costs of accessing community resources that promote health, such as hospitals or food distributors of fruits and vegetables, an individual has more lifestyle choices. Under this opinion, increased availability of community resources contributes to healthier neighborhoods and less availability contributes to more deprived neighborhoods. Due to limited measurement resources, past studies have been unable to observe large communities. However, Pearce et al. use GIS to combine data collected from a variety of formats and can look at
community resources at a national level, allowing a variety of different neighborhoods can be compared with the spatial representation of the GIS mapping. Applying GIS to New Zealand, Pearce et al. compared different census areas and found poor resources to be associated with rural communities.

Pearce et al.’s study actually demonstrates that correlations exist both between community type and available resources and between community resources and available options for participation. Applying this idea to Church & Marston’s model of relative measurement, availability of accessible resources correlates with availability of options for participation by individuals with mobility impairments. Thus, GIS mapping can produce a visual example of the opportunities for participation available to individuals with mobility impairments living in the community. Using the results of Pearce et al.’s study and the tools of GIS mapping and relative accessibility measures, Occupational Therapists (OTs) can use layered maps of community resource accessibility in clinics or community organization to assist clients in discovering participation opportunities.

OTs serve an important role in connecting individuals with community resources. Following through with encouraging functional participation often means informing the client on available resources beyond those in the clinic. In a study by May et al. (2007), individuals with spinal cord injury underwent interviewing at discharge to evaluate the acute rehabilitation education program. Patients in the study felt that having multiple learning and resource formats would open opportunities for learning to a variety of different individuals. Having visual presentations of material along with the speaker helped address the learning needs of everyone in the class. Offering multiple formats of
resources increased accessibility and availability of information and encouraged participants to seek out information when needs arose.

Even years post injury, as Cox et al. found, information needs exist in the mobility impairment population. Thus, the role of the OT stretches from simply helping a client in the clinic to attain better range of motion or fine motor skills, to also enabling future participation through providing resources even after the client has left therapy. This form of intervention can take on multiple forms, including setting up interactive websites encouraging healthy life choices (Woolf et al., 2006) or an outreach team of multidisciplinary specialists providing life-long treatment (Cox et al., 2001). Yet, the need still exists for a relative measure of community accessibility to evaluate community resources available to individuals with mobility impairments, before OTs can offer such information in practice.

Applying a combination of Church & Marston’s relative measurements and the guidelines of Liu & Zhu’s four step process to the PARTS/M, Community Participation and Perceived Receptivity Survey (CPPRS – a follow up survey evaluating participation in identified areas of the PARTS/M), the CHEC, and the Community Resource Index (CRI), a community can be assessed for accessibility and a GIS map of the community resources can be created. While the PARTS/M and CPPRS both define the population and determine the destinations to be measured, the CHEC provides the actual measurement and analysis of the environment. Most importantly, once again, the fourth step of analyzing and interpreting data to produce a relative measure of accessible community resources will come with inputting data from the CRI, which evaluates percentage of resources accessible and density/availability of resources, into
GIS/ACCESS to produce a layered map depicting both accessible resources and accessible travel routes to resources. If this process could successfully produce such a map, OTs and other professionals would have a valuable resource for informing individuals with mobility impairments on where opportunities for participation exist. However, such a map has yet to be developed and one is left wondering - Can the available, accessible community resources identified by the CRI be complied using GIS into a visual format that provides relevant information on participation opportunities for individuals with mobility impairments?
References


