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An Analysis of the Changing Demographics of Individuals with Spinal Cord Injury Who Received State Vocational Rehabilitation Services between 2004 and 2008

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Spinal cord injury (SCI) is considered to be a complex disability; impacting far more than mobility and creating several barriers to employment. To better understand dynamic factors related to employment over time this study analyzed the changing demographics of consumers with spinal cord injury (SCI) who received state vocational rehabilitation services between 2004 and 2008. The entire population of 23,135 individuals with an SCI who closed in status 26 (employment outcome) or 28 (no employment outcome) between 2004 and 2008 were included in the study. Several changes were observed. There was a disproportionate decline in the number of consumers with SCI served by the state VR system between 2004 and 2008. The percentage of women served by the State VR exceeded the estimated general population of women with SCI by over 15% and the proportion of African Americans with SCI who received services during this same period trailed the estimated population by 10%. An expanded method of data collection may be beneficial to confirm the demography of individuals with SCI. Changes in the use of customer supports at application was also observed. An awareness of these changes may assist in outreach efforts and agency collaborations.

Traumatic spinal cord injury (SCI) is a complex disability and considered a severe physical impairment (Basso, 2000; Inge, Wehman, Kregel, & Sherron-Targett, 1996; Logan, Sloane, Lyles, Goldstein, & Hoenig, 2008; Middleton, Leong, & Mann, 2008) as it affects substantially more than an individual's mobility (Dijkers, 2005; Krause & Pickelsimer, 2008; North, 1999). Additive factors include physiological impairments, psychosocial adjustment, secondary conditions, a lack of direct services, and physical and attitudinal barriers (McKinley, Jackson, Cardenas & DeVivo, 1999; Meyers, Mitra, Walker, Wilber & Allen, 2000; Weaver, Guihan, Pape, Legro, LaVela & Collins, 2001; Wehman, Wilson, Parent, Sherron-Targett, & McKinley, 2000). It is estimated that 12,000 individuals acquire and survive spinal cord injuries each year and that 259,000 individuals with SCI currently live in the United States (National Spinal Cord Injury Statistical Center (NSCISC, 2009). Recent findings indicate the average age at injury is 40 with the majority being Caucasian (66.1%), male (80.9%), with motor vehicle accidents (42.1%) or falls (26.7%) being the most frequently reported reasons for injury (NSCISC, 2009). In comparison with findings from 1979, recent statistics suggest that the average age of onset has increased by 12 years and a shift of occurrence by race has

also occurred: Caucasians decreased by 10%, while African Americans nearly doubled (27.1%), and Hispanics experienced a 2.0% increase to 8.1% (NSCISC, 2009).

Employability for individuals with SCI is important as it can help to offset costs often associated with SCI, including attendant care, medical supplies and assistive technology (Krause & Terza, 2006) and that limits in these and other resources, including healthcare, increase the risk of morbidity and mortality (Aday, 1994; Flaskerud & Winslow, 1998; Krause, DeVivo & Jackson, 2004). Further research suggests individuals with tetraplegia or injury to the cervical section of the spine (e.g., neck) acquired at an early age (e.g., 20 years old) may die on average 20 years earlier than those without injury and seven years earlier than those with paraplegia (NSCISC, 2009); additionally, minorities, older individuals and rural residents are at higher odds for death (Saunders, Selassie, Hill, et. al., 2009).

While these factors suggest employment is important for the well-being of consumers with SCI, several decades of research indicate an acquired SCI significantly impacts employability with level of education, age at injury, gender, and race serving as interactive factors. Almost sixty percent (57.5%) of those with SCI were employed at the time of injury; however, only 11.5% were employed one year post injury, and just over 35% were employed 20 years later (NSCISC, 2009). Individuals with SCI fall slightly below the national employment average for all individuals with

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any disability (reported at 36.0% for 2007; Meade, Armstrong, Barrett, Ellenbogen, & Jackson, 2006; U.S. Census Bureau, 2007) and those employed have lower rates of income (Basso, 2000; Wehman et al., 2000).

Similar to findings of the aggregate disability population, level of education has been positively correlated with employability (Anderson, Dumont, Azzariaa, Le Bourdais, & Noreau, 2007; Berkowitz, O'Leary, & Kruse 1998; Hirsh, Molton, Johnson, Bombardier, & Jensen, 2009; Krause, 1992) with an increased level of education increasing employment options as well (Anderson, & Vogel 2002). Factors associated with age suggest that those injured later in life have poorer employment outcomes (Hirsh et. al., 2009; Yasuda, Wehman, Targett, Cifu & West, 2002). This may be associated with a longer period of adjustment with spinal cord injury as studies indicate employment rates increase as time since injury increases (Krause & Coker, 2006; Krause, et al., 1999; Meade, Lewis, Jackson & Hess, 2004). While research on factors such as education and age at injury is generally consistent, studies on factors such as gender and race show mixed findings. Some research reports women had delayed entry into full time employment (Krause, Terza, Saunders & Dismuke, 2010), were less likely to be competitively employed than their male counterparts (Yasuda et al., 2002; Young, Alfred, Rintala & Hart, 1994) and that those women who were competitively employed generally worked fewer hours than their male counterparts (Krause, et al., 1999). Still other studies have shown women achieve better outcomes than their male counterparts (Krause & Anson, 1996; Marinia, Lee, Chan, Chapman & Romero, 2008). These discrepancies may be explained by a number of interacting variables that influence outcome by gender, which include education, type of work, age and level of injury (Anderson, Dumont, Azzariaa, Le Bourdais, & Noreau, 2007; Marinia, et. al., 2008). An examination of studies in race, SCI and employability uncovered variability in findings as well. Several studies report that race is correlated with employment success, with European Americans more likely to become employed (Hess, Ripley, McKinley, & Tewksbury, 2000; James, DeVivo, & Richards, 1993; Kundu, Dulta & Walker, 2006; Krause, et al., 1999; Meade, et. al., 2004; Krause, Sternberg, Maides, & Lottes, 1998; Yasuda et al., 2002; Young, et al., 1994). Still others have found converse findings (Bellini, 2003; Giesen, Cavanaugh, & Sansing, 2004; Wilson, Alston, Harley & Mitchell, 2002). Such discrepancies illuminate the complexity of factors that influence employability. Coupled with the risk and vulnerability associated with SCI the need to understand the consumer demographics of those receiving services and the impact of service provisions to employability is highly important.

Because consumers are dynamic it is also important for providers to assess demographic changes over time so they can effectively adjust their services to meet changing characteristics. The Rehabilitation Services Administration (RSA) is the federal organization that oversees all public vocational rehabilitation (VR) services for individuals with disabilities. (Leahy & Szymanski, 1995) and serves as an important provider of employment services for consumers with SCI. Because the RSA requires each of their state agencies to collect and report consumer data on

an annual basis, it also provides a great mechanism to evaluate factors associated with SCI and employability, over time. Consumer records are maintained in a database referred to as RSA-911 and made available to researchers through RSA. Marinia and colleagues suggest that the RSA-911 dataset is one of a few options that, "afford rehabilitation researchers the opportunity to study a full range of predictors discussed in the SCI literature" (2008, p. 2). These predictors include demographic characteristics such as gender and race. Additional factors often referred to as consumer inputs include support services such as government benefits. A number of important studies have been conducted to provide an improved understanding of the interaction between these characteristics and the agencies providing employment services, but no single study has evaluated the changing demographics of consumers with SCI served by State VRs (Dutta, Gervy, Chan, Chou & Ditchman, 2008; Gilmore, Schuster, Timmons, & Butterworth, 2000; Krause et al., 2008; Marinia, et al., 2008). Examining changes in the demographic profile of individuals with SCI seeking employment may provide counselors and agencies with a better understanding of the population they are serving as well and an overview of any patterns of change within this population. Additionally, an analysis of the supports received at application during the period of study may illuminate any patterns of change in the allocation of services for further analysis.

This study attempted to determine demographic changes over a five-year period of time for persons in the VR system via archival study of the RSA 911 database. This study examined participants who completed an Individualized Plan for Employment (IPE) and received services through the public rehabilitation program between 2004 and 2008... The overall hypothesis was that there would be no statistically significant change in the aggregate number, gender or race of participants during the five years studied and that the use of public services would remain stable during this time as well. More directly:

1. The aggregate population of study participants' services would remain consistent during the remaining four years of study.
2. A higher proportion of males with SCI would have completed an IPE and received services during year one and that this pattern would remain consist during the remaining four years of study (even when correcting for the proportionate difference between gender and SCI [80% male versus 20% female]).
3. A higher proportion of Caucasian customers would have completed an IPE and received services during year one and that this pattern would remain consist during the remaining four years of study (even when correcting for the proportionate difference between race and SCI).
4. The population of customers using public services at application would remain consistent during the five years of study.

Method

Participants

Study participants were individuals with SCI who received services prior to closure and consisted of 23,135 customers who closed in status 26 (employment outcome) or 28 (no employment outcome) between 2004 and 2008. The population consisted of 15,032 men (65.0%) and 8,103 women (35.0%). The majority of the population, 16,225 of those served, were Caucasian (70.2%) followed by 3,941 African Americans who represented an additional 17.0%. The 2,035 Hispanic or Latino consumers represented an additional 8.8%, 342 were Multiracial (1.5%), 297 were Native American or Alaskan Native (1.3%), 228 were Asian (1.0%), and 58 were Native Hawaiian or Other Pacific Islander (0.3%).

Variables

The dependent variable used was year of service. This variable was used to examine any patterns of change in the demographic characteristics and types of supports at application for consumers served between 2004 and 2008. The sets of predictor variables include demographic and support variables. Demographic variables include gender and race. Supports at application include General Assistance (State or local government), Medicaid Insurance Coverage, Medicare Insurance Coverage, Social Security Disability Insurance (SSDI), Supplemental Security Income (SSI) for the Aged, Blind or Disabled, Temporary Assistance for Needy Families (TANF), workers compensation, public insurance from other sources at application, private insurance through other means, private insurance through own employment and a separate category that sums the number of supports.

Data Analysis

An ex post facto design was used as this type of design is consistently used to perform impact analysis on existing data such as the RSA-911 data and is useful in establishing a relationship between variables. This study's design utilizing RSA 911 data fits Kerlinger's (1986) ex post facto design definition as it employs independent variables that have already occurred and starts with the observation of a dependent variable. In this study independent variables were not manipulated (as they have already occurred) and the rehabilitation outcome was not randomly selected.

Data Analysis

For this study, univariate measures (descriptive statistics) were used to identify frequencies and percentages of the composition of consumers with SCI on an aggregate basis and for each

fiscal year. Cross tabulations and chi-square analyses were used to assess differences associated with demographic and service variables in relation to fiscal years of service. Chi-square test for independence was used because of its appropriateness in analyzing the relationship between categorical variables such as gender and race ethnicity (Bellini & Rumrill, 1999; Gravetter & Wallnau, 2000; Pallant, 2001). For all statistical tests the alpha level was set at 0.05; a Bonferroni correction was received to correct for the number of statistical tests within each predictor.

Results

As illustrated in Table 1: using year one of the study as a baseline the decrease in consumers with SCI totaled over 33.0% for the five years studied as participation numbers dropped from 5,916 in 2004 to 3,803 in 2008. In contrast the aggregate population of all customers served by State VR's (excluding those with SCI) decreased by just over eight percent (8.3%); from 379,158 in 2004 to 350,071 in 2008. A direct comparison of the percentage of SCI customers with the aggregate population by year reflects a consistent decrease from 0.016% in 2004 to 0.011% in 2008 (Table 1).

There was no significant difference in relation to gender during the study period though women were served at a rate higher than statistically expected (Table 2). The U.S. Census Bureau, 2005-2009 American Community Survey (2010) indicate women represent over 50% of the population; however, there is a general consensus that males acquire spinal cord injury at a higher rate due to factors including higher risk taking behavior (McKinley, Santos, Meade, & Brooke, 2004). Data collected from the National Center Spinal Cord Injury Statistics Center report that women comprise less than 20% of individuals with SCI (NCSCISC, 2010); however women account for 35% of the population receiving vocational rehabilitation services by the State VR. An analysis of demographic changes of gender during the period of study reflected that the percentile mix by gender was fairly consistent; changing by less than 1.0% for years 2004 to 2007 with an decrease of just under 3.0% in 2008.

Findings from the data analysis on race supported the third hypothesis; as there were no significant annual changes in the dispersion of consumers by race during the period of study (Table 2). However, similar to findings observed by gender a difference in the aggregate proportion of African American's served by the State VR agencies with the percentage reported by the NSCISC (2009). Caucasians represent 66.1% of those with SCI and 70.2% of those served by the State VR system. African Americans represent 27.1% of those with SCI and 17.1% of VR consumers. The difference in population numbers between the State VR data and the NSCISC for Hispanic and Asian populations was less remarkable. Hispanic individuals with SCI represent 8.1% of the total population and 8.7% of VR consumers

Table 1

SCI and Aggregate Customer Characteristics by Year

	2004	2005	2006	2007	2008
	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
	<i>%</i>	<i>%</i>	<i>%</i>	<i>%</i>	<i>%</i>
VR Customers (No SCI)	379,158	351,292	347,711	340,454	350,071
VR Customers (SCI Only)	5,915	4,937	4,427	4,053	3,803
% of VR Customers	0.016	0.014	0.013	0.012	0.011

served. Asian's are the final group classified by the NSCISC and total 0.9% of those with SCI and 1.0% of VR consumers

While hypothesis four speculated that the number of customers using supports at application would remain unchanged the data reflected statistically significant changes in a number of support types (Table 3). An examination of the customers primary source of support at application revealed that Support from family and friends decreased from 35.0% in 2004 to 32.5% in 2008. Conversely, the use of public supports at application increased from 39.8% in 2004 to 42.1% in 2008. When analyzing specific types of public supports, a consistent increase was found in the percentage of consumers utilizing Social Security Disability Insurance at application from 23.7% in 2004 to 30.5% in 2008 and a 1.2% decrease in the use of general assistance at application during the same years. Other public support had an overall reduction from 8.3% in 2004 to 7.8% in 2008 but had a nonlinear variation greater than 2% through the years, with an 8.9% peak in 2005 to a 6.2% low in 2007.

Medicaid insurance coverage increased from 23.8% in 2004 to 31.7% in 2008. Medicare increased as well from 13.6% in 2004 to 20.3% in 2008. A chi-square analysis indicated statistically significant changes existed in the number of days from application to eligibility from 2004 to 2008. The number of consumers determined eligible within 30 days of application increased by 5.3% from 49.6% in 2004 to 54.9% in 2008. Inversely those receiving eligibility after 30 days declined with a 3.0% reduction occurring in the 60-90 days category and a 2.1% reduction occurring in the 91 days or more category.

Discussion

Of particular importance was a disproportionate decline in the number of consumers served by the state VR's between 2004 and 2008. Reasons to explain this sharp decline should be investigated. One consideration would be that the aggregate number of individuals with SCI is declining in response to knowledge based practices (e.g., safety belt usage, a deterrent effort toward diving accidents). Since there has not been any overall incidence study of SCI in the U.S. since the 1970's, it is not known if incidence has changed in recent years (NSCISC, 2009). A shift in marketing or outreach practices that shift focus from consumers with spinal cord injury is an additional possibility. A change in the methods of classification by rehabilitation counselors could impact this number as well although no change in the classification of disabilities was reflected in the Case Service Report for the five year's studied. Finally an upward shift in the age of those being injured may be accountable for the decline as well. As earlier noted data collected by the NSCISC (2009) reflected an upward shift in age of those acquiring an SCI - raising the average age by 12 years. If this shift increased the population of those over sixty with SCI and reduced the number of younger individuals this may account for some of the decline in those seeking and receiving services as those over 60 represent less than 2.0% of those seeking services. It is possible that changes in the number of States implementing order of selection criteria could have impacted acceptance rates; however because spinal cord injury is considered a severe disability it is reasonable to expect this population would have been impacted at a rate less than the aggregate population. Definitive conclusions are beyond the scope of this study but further research into this significant decline should be further investigated.

Table 2

Demographic Characteristics of SCI Consumers at Application, by Year

Consumer Demographics	Population of Consumer's with SCI Served					Percentage of Consumer's with SCI Served				
	2004	2005	2006	2007	2008	2004	2005	2006	2007	2008
Gender	5,915	4,937	4,427	4,053	3,803					
Male	3,820	3,173	2,858	2,626	2,555	64.6	64.3	64.6	64.8	67.2
Female	2,095	1,764	1,569	1,427	1,248	35.4	35.7	35.4	35.2	32.8
Race	5,906	4,937	4,427	4,053	3,803					
African American	1,003	818	733	729	658	17.0	16.6	16.6	18.0	17.3
Asian	56	52	41	36	43	0.9	1.1	0.9	0.9	1.1
Hispanic	572	411	404	307	341	9.7	8.3	9.1	7.6	9.0
Multiracial	74	68	73	71	56	1.3	1.4	1.6	1.8	1.5
Native American or Alaskan Native	75	71	56	51	44	1.3	1.4	1.3	1.3	1.2
Native Hawaiian or Other Pacific Islander	13	16	9	10	10	0.2	0.3	0.2	0.2	0.3
White	4,113	3,501	3,111	2,849	2,651	69.6	70.9	70.3	70.3	69.7

As earlier noted a review of study participants by gender by year found no statistically significant difference over the five years studied. However, a review of the aggregate number of women with SCI who received VR services between 2004 and 2008 exceeded the proposed population of women with SCI by 15%.SCI (NSCISC, 2009). A review of an earlier study of VR customers with SCI receiving services in 2001 reported a similar breakdown by gender (Marini et al., 2008). While their population included the entire aggregate of customers their study reported a population of 65.3% males and 34.7%.

While neither exhaustive nor definitive there are several reasons why women may be served in higher numbers. As previously discussed the general population of women who acquire an SCI may be higher than 20%. Alternatively women with SCI may have a greater need to work as several studies suggest that women are less likely to be supported by their families or spouse following an SCI (Jans & Stoddard, 1999; Nosek & Walter, 1992; Shackelford, Farley & Vines, 1998). A third factor may be time of injury. Because studies suggest women are injured slightly later in life they may have a greater work history from which to build as opposed to their younger male counterparts (NSCISC, 2009). Women with SCI as well as service providers may benefit from research in these areas as well as research that further explore factors associated with employability and women with SCI.

Race is an additional area for further examination. The number of African Americans with SCI has seen a dramatic increase to 27.1% of those acquiring SCI (NSCISC, 2009). The NSCISC (2009) suggest this increase may be a result of a combination of factors including the changing racial demography in the United States, location changes in and referral patterns to model systems and race-specific factors. As earlier reported employability is complex and associated with more than race and includes education, type of work, age, level of injury access, availability, referral, transportation, cultural valuing and more. Regardless of these complex dynamics further research to determine the population of African Americans with SCI and the provision of services by State VRs may be warranted.

Factors associated with support also experienced change between 2004 and 2008. Family and friends as primary sources of support at application decreased from 35.0% in 2004 to 32.5% in 2008. Conversely, the use of public supports at application increased from 39.8% in 2004 to 42.1% in 2008. When examining specific types of public supports between 2004 and 2008 a consistent increase was found in the percentage of consumers utilizing Social Security Disability Insurance at application from 23.7% in 2004 to 30.5% in 2008 and a 1.2% decrease in the use of general assistance at application during the same years. Other public support had an overall reduction from 8.3% in 2004 to 7.8% in 2008 but had a nonlinear variation greater than 2% through the years, with an 8.9% peak in 2005 to a 6.2% low in 2007. It is reasonable to suggest that these changes are reflective of the economic downturn experienced during the period of study which may have impacted an individual's ability to main self-sufficiency and impacted the option of assistance from friends and families. Medicaid insurance coverage increased from 23.8% in

2004 to 31.7% in 2008. Medicare increased as well from 13.6% in 2004 to 20.3% in 2008.

Implications for Reporting Agencies

The disproportionate decline in the number of consumers with SCI served by the state VR's observed between 2004 and 2008 suggests the need for further investigation. Current survey methods collect data on subsets rather than the aggregate population of individuals with SCI. As earlier reported there has not been any overall incidence study of SCI in the U.S. since the 1970's (NSCISC, 2009). The NSCISC, the primary organization collecting data on individuals with SCI surveys only a percentage of individuals with SCI (estimated at 13.0%). The Rehabilitation Services Administration, Social Security Administration and Veterans Administration collect data on an additional subset of individuals with SCI. The one entity that could capture the aggregate SCI population, the U.S. Census Bureau, does not assess disability by impairment type.

The current body of data collected on individuals with SCI for fractured but important data on this population; however, a more comprehensive study may provide a clarified picture of those with SCI. Such a study could confirm the aggregate SCI population by key demographic variables including gender and race and provide agencies serving this population with a more comprehensive baseline for evaluation.

Implications for Vocation Rehabilitation Services

While findings from this study do not suggest errors in the reporting of consumers with SCI within the VR system, an examination of and an in-service in the methodology used to classify an individual with an SCI may be beneficial to insure accuracy in consumers' classifications. It may also be beneficial to review current recruitment priorities and any changes that occurred around the study period to determine any plausible causality in recruitment efforts. An awareness of these changes in the use of public supports over the period of study may assist State VR counselors and the RSA administration in their outreach efforts and agency collaborations.

Implications for Social Support Services

An increase in the number of consumer's with SCI using public services was observed. Factors including a weakening economy, policy shifts, availability of jobs and changes in the ability of support from families and friends could have influenced the increase in public services. Even with the systematic improvements to overcome disincentives, health related factors including the increased susceptibility to secondary conditions and need for attendant care services may make individuals with SCI more reticent to disengage from public assistance programs. Finally, because SCI is a complex disability that impacts multiple body systems and often requires significant accommodations in transportation, environment and attitude an expansive body of supports and services may need to be utilized to improve the employability of individuals with SCI.

Limitations

Several limitations of this study should be considered in review of these findings. First, this study used RSA 911 data. The use of archival data restricts the ability of the researcher to control for human error that may have occurred during the coding of consumer records. Also because this study's timeframe is limited to a five year period there aren't enough cycles ($n < 10$) for an actual

trend analysis. Finally, because this study population was composed of VR consumers, findings may be less applicable to populations being served by other employer networks; especially those incurred as a result of an accident who receive services, including VR, from a private vendor such as workers compensation or other insurers including automobile insurance programs. Finally, environmental factors including economic challenges, changing options in employment, shifts in policy, adjustments in the order

Table 3

SCI Consumer Supports at Application, by Year

	Population of Consumer's with SCI Served					Percentage of Consumer's with SCI Served				
Consumer Supports	2004	2005	2006	2007	2008	2004	2005	2006	2007	2008
Primary Source of Support ¹	N	N	N	N	N					
	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	%	%	%	%	%
Personal income	5,906	4,920	4,420	4,050	3,795					
Family friends	811	724	640	660	621	13.7	14.7	14.5	16.3	16.4
Public support	2,068	1,750	1,544	1,295	1,233	35.0	35.6	34.9	32.0	32.5
Other	2,352	1,904	1,798	1,738	1,597	39.8	38.7	40.7	42.9	42.1
	675	542	438	357	344	11.4	11.0	9.9	8.8	9.1
Type of Public Support										
Social Security Disability ²	5,901	4,934	4,422	4,049	3,793					
	1,396	1,251	1,270	1,252	1,157	23.7	25.4	28.7	30.9	30.5
SSI – Aged, Blind, Disabled	5,898	4,933	4,422	4,048	3,793					
	1,095	949	877	847	806	18.6	19.2	19.8	20.9	21.2
TANF	5,898	4,934	4,423	4,050	3,795					
	159	111	84	66	70	2.7	2.2	1.9	1.6	1.8
Veterans' Disability	5,896	4,934	4,423	4,050	3,795					
	52	34	35	25	30	0.9	0.7	0.8	0.6	0.8
Workers' Compensation	5,898	4,934	4,423	4,050	3,795					
	315	211	184	176	160	5.3	4.3	4.2	4.3	4.2
General Assistance ³	5,898	4,934	4,423	4,050	3,795					
	189	109	76	88	76	3.2	2.2	1.7	2.2	2.0
Other Public Support ⁴	5,898	4,934	4,423	4,050	3,795					
	487	438	350	251	295	8.3	8.9	7.9	6.2	7.8
Type of Medical Insurance										
Medicaid ⁵	5,844	4,915	4,415	4,029	3,784					
	1,391	1,262	1,211	1,184	1,201	23.8	25.7	27.4	29.4	31.7
Medicare ⁶	5,842	4,913	4,413	4,011	3,784					
	792	749	774	799	768	13.6	15.2	17.5	19.9	20.3
Other Public Source	5,848	4,914	4,416	4,007	3,785					
	231	216	171	181	162	4.0	4.4	3.9	4.5	4.3

of selection and advancements and modifications in the medical treatment of SCI could have an impact in the outcome and study findings.

Conclusion

There was a disproportionate decline in the number of consumers with SCI served by the state VR system between 2004 and 2008. Authors suggest that a review of outreach to and classification of consumers with SCI served by State VR's during the study period may help determine any internal causality for this decline. Alternatives outside the control of State agencies were also discussed and include an upward shift in age of individuals acquiring SCI to include older, retired non-working populations and an overall decrease of consumers acquiring SCI as a result of preventative technologies and media outreach. Although the aggregate population declined each year the percentage of those served by gender and race remained stable. A comparison of the estimate of the general population of women and African American's with SCI collected by the NSCISC and the percentage of women and African American's served by State VR revealed a relatively significant difference. The percentage of women served by the State VR exceeded the estimated general population of women with SCI by over 15% and the proportion of African Americans with SCI who received services during this same period trail the estimated population by 10%. Because these two

datasets are not mutually inclusive it is difficult to ascertain if there are discrepancies in the population estimates or a non-proportional number of women and African American's with SCI receive VR services. A more comprehensive data collection method to capture the aggregate population of consumers with SCI may help address these discrepancies. Finally changes in the use of consumer supports at application were also noted. It is likely that changes in the economy, government policies, availability of jobs and other factors have impacted the access to and use of these supports. An awareness of these changes may assist in outreach efforts and agency collaborations.

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Table 3 (continued)

SCI Consumer Supports at Application, by Year

	Population of Consumer's with SCI Served					Percentage of Consumer's with SCI Served				
Consumer Supports	2004	2005	2006	2007	2008	2004	2005	2006	2007	2008
Primary Source of Support ¹	N	N	N	N	N					
	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>%</i>	<i>%</i>	<i>%</i>	<i>%</i>	<i>%</i>
Private via Employment	5,838	4,912	4,407	4,006	3,781					
	496	432	352	359	345	8.5	8.8	8.0	9.0	9.1
Private via Other Means	5,837	4,911	4,405	4,007	3,781					
	1,179	908	847	792	737	20.2	18.5	19.2	19.8	19.5
Number of Supports at Application	5,895	4,933	4,421	4,048	3,792					
0	2,694	2,264	1,963	1,720	1,598	45.7	45.9	44.4	42.5	42.1
1	2,760	2,276	2,071	1,975	1,835	46.8	46.1	46.8	48.8	48.4
2	401	353	358	332	322	6.8	7.2	8.1	8.2	8.5
3	39	40	28	19	35	0.7	0.8	0.6	0.5	0.9
4	0	0	1	2	2	0.0	0.0	0.0	0.0	0.1
5	1	0	0	0	0	0.0	0.0	0.0	0.0	0.0

1 χ^2 (12, N = 23,091) = 67.65, $p < .0005$

2 χ^2 (4, N = 23,099) = 99.44, $p < .0005$

3 χ^2 (4, N = 23,100) = 29.65, $p < .0005$

4 χ^2 (4, N = 23,100) = 23.76, $p < .0005$

5 χ^2 (4, N = 22,987) = 89.08, $p < .0005$

6 χ^2 (4, N = 22,963) = 114.45, $p < .0005$

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