DIFFERENCES IN CHARACTERISTICS OF SUCCESS FOR PERSONS WITH A PRIMARY DIAGNOSIS OF A MENTAL HEALTH DISORDER IN URBAN AND RURAL AREAS

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School
The Ohio State University

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ABSTRACT

Much has been written about the characteristics of success for persons with a primary diagnosis of a mental health disorder. However, few studies have examined the characteristics of success for persons with a primary diagnosis of a mental health disorder that reside in rural areas. This study explored differences in characteristics of success in service delivery and outcome for individuals residing in urban and rural areas that received services through the state-federal vocational rehabilitation system (VR) in a Midwestern state during the year 2002. The demographic data describing urban and rural individuals highlight some disparities that exist prior to service delivery. This study examined the differences in total case expenditure, hourly wages, weekly hours worked, and level of education at the end of case closure for those successfully employed (status 26) to determine if the VR system works to improve some of the demographic disparities between the two groups.

Logistic regression analysis was conducted to determine any differences in working at time of referral, educational level at time of referral, and services received between those residing in an urban or rural county. The logistic regression model demonstrated that working at time of referral and having a bachelor’s degree were more probable for those consumers residing in an urban county. A t-test indicated that there was not a difference in mean number of services for those in urban and rural counties;
however, the logistic regression model indicated that Business or Vocational training and Maintenance services has a higher probability of occurring for those consumers in an urban county.

MANOVA results of outcome variables indicated that hourly wage was statistically significant between consumers residing in urban and rural counties. The mean hourly wage for the urban population was $9.28 and the mean hourly wage for the rural population was $4.82. The results of the study demonstrate some differences in the VR experience of consumers in urban and rural counties.
Dedicated to my mother, Delores Mays.

She has shown me the

true meaning of love and sacrifice.
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CHAPTER 1

INTRODUCTION

This chapter briefly describes the challenges that confront vocational rehabilitation counselors and rehabilitation professionals in the rural setting when working with persons who have a primary diagnosis of a mental health disorder. Mental illness leads to functional impairment. Functional impairments lead to difficulties in completing activities of daily living, vocational abilities, social relationships, and leisure activities. Advances in recognizing a neurological foundation of mental illness have facilitated new perspectives in understanding mental illness as disorders which has led to improved pharmaceutical treatments of the impairments associated with mental health disorders. However, the collection of impairments experienced by persons with a mental illness require comprehensive, and at times long-term, services which challenge the mental health care system and other service providers. Rural areas are less likely to have the resources to meet the extensive challenge that persons with a mental illness pose, especially persons with a severe and persistent mental illness (Blank, Jodi, & McCall, 1996; NIMH, 2001; Wagenfeld, Goldsmith, Stiles, & Manderscheld, 1988; Yuen, Gerdes, & Gonzales, 1996).
Prevalence of Persons with Disabilities

Historical records support the existence of persons with disabilities but do not provide us with the number of persons with disabilities. However, the average life expectancy, at least for the past century, is well documented. Overall, the current median age at death has increased by about 30 years since the early 1900’s (Perenboom, van Herten, Bushuizen, & van den Bos, 2004). Like mortality, disability is a large-scale phenomenon that is slow to change in a population. Trends are not always easy to explain because there are multiple causes that go way back in history. Yet, knowing rates and prevalence for disabilities helps public health officials plan for the allocation of scarce resources in focusing on primary and secondary prevention programs aimed at reducing the rates and limitations of disabilities.

Recent reported trends in disability reveal that disability grew by about 3% in the United States from 1970 to 1981. During the 1980’s the disability rate remained the same at about 14% of the population (LaPlante and Kaye 1998). The slight increase during this time period may be attributed to the population aging. However, from 1990 to 1994 the rate increased but the increase was concentrated in the younger age groups. Specifically, the disability rate remained the same for persons over age 45, but increased for persons 18-44 by about 2% (LaPlante and Kaye 1998).

According to the Census 2000 (U.S. Census Bureau, 2002), 49.7 million people age 5 and over have a disability, representing 19% of United States residents. Census 2000 (U.S. Census Bureau, 2002) results also support the previous findings from 1990 in the majority of persons with disabilities range in age from 21 to 64 at 30.6 million.
The advances made in medical technology that has helped our society age has also helped those born with congenital disabilities and those persons who acquire disabilities to survive.

The data on persons with disabilities shows some disparities among persons from different ethnic groups. The reported rate of disability by individuals in ethnic groups varies from a low 9.9% for Asian and Pacific Islanders to a high of 21.9% for Native Americans. The rate for persons of African descent are a total of 20% (10.1 million) but they have the highest proportion of those with a severe disability at 12.2% or 3.8 million (LaPlante and Carlson 1996).

Mental Health Disorders

Mental health disorders are common worldwide. Mental health disorders represent five of the ten leading causes of disability globally: major depression, alcohol use, bipolar disorder, schizophrenia, and obsessive-compulsive disorders (The Global Burden of Disease, 2000). In the United States, one current prevalence estimate is that about 22 percent of the adult population is affected by mental disorders during a given year (NIMH, 2000). This estimate comes from two epidemiological surveys: the Epidemiological Catchment Area (ECA) study of the early 1980’s and the National Comorbidity Survey (NCS) of the early 1990’s. Both surveys defined mental illness according to the prevailing editions of the Diagnostic and Statistical Manual of Mental Disorders (i.e., DSM-III and DSM-IIIR). The surveys estimate that during a 1-year period, 22 percent of the U.S. adult population has diagnosable mental disorders (NIMH, 2000). Further, about 28 to 30 percent of the population has either a mental or addictive
disorder (Kessler et al., 1994). Individuals with co-occurring disorders represent about 15 percent of the population in 1 year (Kessler et al., 1996).

Another current prevalence rate of mental health disorders in the United States comes from the National Health Interview Survey on Disability, Phase I from 1994 to 1995. Twenty-seven percent of the survey participants reported experiencing some symptom or difficulties relating to mental health issues, but only 8% report experiencing a mental health disorder in the past 12 months (LeBlanc, Kang et al. 2001). It is important to note that prevalence data does not measure level of severity or duration of disorder. It may be hypothesized that some of the individuals experiencing symptoms may actually develop a mental health disorder.

Many individuals will recover from acute episodes or prolonged residual courses of illness. The remainder will continue to experience impaired physical, social, emotional, housing, and vocational problems. The latter group is more commonly considered to have severe and persistent mental illness. It is estimated that 2.8% of the U. S. population, or 5 million adults experience severe mental disorders (Stoddard et al., 1998). A basic tenant of these disorders is that psychiatric symptoms often reoccur and persist over time. Historically, these disorders were referred to as “chronic.” The term chronic was eliminated as it connoted a pejorative meaning of low functioning and hopelessness (Harding, Zubin, & Strauss, 1992).

Although the evidence is not completely conclusive, previous epidemiology studies suggest that the prevalence of mental health disorders is about the same in rural and urban settings (National Rural Health Association, 1999). Likewise, the overall prevalence of alcohol and other substance use among rural individuals has been shown to
be of at least of the same magnitude as urban areas although there may be certain areas where the use of a specific drug is particularly problematic (National Rural Health Association, 1999). The most recent available data suggests that mental health disorders are highest in metro areas and lowest in the suburbs with rural areas ranking in the middle (LeBlanc, Kang, Mullan, & LaPlante, 2001). According to the National Health Interview Survey on Disability, Phase I from 1994 to 1995, the urban areas has twice the proportion of individuals with mental health disorders with 16% compared to rural areas with only 8% (LeBlanc, Kang et al. 2001).

However, one needs to look beyond pure numbers to determine the effects of mental illness in the rural areas. Multiple socioeconomic factors impact the delivery of services to individuals with a primary diagnosis of a mental health disorder in rural areas. It is a wide held belief in any setting that the stigma associated with mental illness precludes some individuals from seeking treatment (Corrigan, 1998; Slovenko, 2001; Starr, Campell, & Herrick, 2002) and precludes some individuals from adjusting to their illness (Dickerson, Sommerville, Origoni, Ringel, & Pavrente, 2002; Markowitz, 1998; Matorin, 2002; Prince & Prince, 2002). Further, demographic data reveal that persons residing in rural areas are older, more ethnic diverse, experience higher unemployment rates, experience poverty at higher rates, and have less affordable housing and transportation (Harriman, 2000; RUPRIa, 1999; RUPRIb, 1999; Sturm, Gresenz, Pacula, & Wells, 1999). All of these factors suggest the impact of mental illness to be greater in rural areas than in urban areas requiring further study on multiple levels.
Importance of Work in Psychosocial Rehabilitation

The importance of work in the psychosocial rehabilitation process for persons with mental illness has been well established (Vorspan, 1992; Arns & Linney, 1993; Blankertz & Robinson, 1996). Super’s (1990) Life-Span Approach to career development highlights the importance that work adds to one’s self-concept and well-being. Super (1990) posits that we are involved in multiple life roles that impact one another. Success in one area helps to facilitate growth or success in another life role. In some aspects, when one thinks of what work does for each individual there may be some idiosyncratic responses. Research has shown, however; that work plays a very important role in an individual’s self-concept and well-being. Work for persons with a mental illness has been shown to increase self-esteem (Blankertz, 2001; Van Dongen, 1998), increase quality of life (Browne, 1999; Vanden Bom & Lustig, 1997), increase level of independent living (Bond, Dincin, Setz, & Witheridge, 1984), decrease hospitalizations, and stabilize symptoms (Bond, 1984; Bond, Resnick, Drake, Xie, McHugo, & BeBout, 2001; Mueser et al., 1997).

Mental health disorders are the fifth reported chronic condition causing work limitations. Employment rates for persons with a mental illness are far behind persons with any other disability. The literature on employment among persons with disabilities indicates that they experience lower labor force participation, higher unemployment rates, and higher part-time employment than persons without disabilities. From 1983 to 1994 the percentage of individuals with a mental illness employed ranged from 19.4% to 32% (Trupin, Sebesta, Yelin, & LaPlante, 1997). Employment rates for persons with other disabilities ranged from 39% to 64% between 1983 and 1994 (Trupin et al., 1997).
The Current Population Survey (CPS) reports work disability as a condition that limits the kind or amount of work one is able to do and severe work disability as a condition that prevents working (Stoddard, et al., 1998). According to their definition, 17.4 million, or 10.2% of the population of the 1997 working-age group (16-64) in the United States had a disability that prevented or limited work with 64.6%, or 11.3 million reporting a severe work disability (Stoddard et al., 1998). The majority of individuals with a work disability are not in the labor force. Only 5.7 million (33.1%) of the 17.4 million persons between the ages of 16 and 64 are employed; whereas, 125.5 million (81.9%) of individuals with no reported disability are employed (Stoddard et al., 1998).

A correlation appears to exist between employment and level of education and age regardless of disability status; however, the impact is much greater for persons with disabilities. As level of education increases so does the participation in the labor force. Looking at less than 12 years of education, 12 years of education, 13-15 years of education, and 16 years or more of education, the percentage of employed persons with no reported disability increases from 76.6% to 90.3%; whereas, the range for persons with a disability increases from 17.8% to 53.4% (Stoddard et al., 1998). As age increases, fewer individuals with work disabilities are employed. There is virtually no difference in rate of employment for persons aged 16 to 34 with a disability. The rate of employment for persons with a disability decreases from age 35 to 64. Likewise, persons with no disability increase their employment rate as they age with a slight decrease after age 54 (Stoddard et al., 1998).

Employment status is perhaps the greatest determinant of income level. Unemployment and part-time work are correlated with living below the poverty level.
Those individuals with disabilities unable to work are nine times more likely to be living below the poverty level than persons without disabilities (LaPlante, Kennedy et al. 1997).

Rural America

Rural and small town America has seen many demographic and economic shifts in the past few decades. During the past three decades, our country, as a whole, has grown by 38.4% and rural counties grew by 28.7% (Beale 2001). During the 1990’s the rural population grew faster than the urban population. In 1997 over 54 million Americans lived in rural areas, making up 20 percent of the United States population (Beale, 1999). Rural counties account for nearly 75% of all counties and constitute 83% of our nation’s land (RUPRI(c), 1999).

There are between 11 and 15 million persons with a disability in the rural areas and about half of these have severe disabilities (Rural Institute, 1999). Perhaps more important than mere numbers are the demographic, economic, employment, educational, and health care conditions of the rural population. The overall effect when comparing differences between rural and urban residents highlights that the impact of a disability is much greater in the rural areas.

Rural America is older with a higher proportion of minority residents. Elderly individuals (aged 65 and older) make up 18.4% of the rural population compared to only 15% of the urban population (RUPRI(d), 1999). Since the 1980’s, the proportion of minorities in rural areas has been increasing. In 1997, minorities constituted 17% of all rural residents: 42% of Native Americans live in rural areas, 15% of African-Americans lived in rural areas, 9% of Hispanics lived in rural areas, 5% of Asians lived in rural areas, and 23% of Whites lived in rural areas (RUPRI(d), 1999). The increase in
minorities in rural areas is partially due to changes in census definition of racial
categories, higher fertility rates, and international migration (RUPRI(e), 1999).

Poverty is more widespread in the rural areas. In 1997, the poverty rate in rural
areas was 16% and only 13% in urban areas with 23% of rural counties considered
persistently poor as evidenced by 20 percent or more of the population in these counties
living in poverty from 1960 to 1990 (RUPRI(f), 1999). Rural poor families are more
likely to be employed and still poor. A higher percentage of rural individuals work two
jobs, 7.1%, compared to urban workers at 6% (RUPRI(g), 1999). In 1995, 60% of poor
families worked some time during the year and 24% worked full time (RUPRI(g), 1999).
Incomes are generally lower in rural America. In 1996, per capita income in rural areas
was $18,527 compared to $25,944 in urban areas (RUPRI(h), 1999). Likewise,
unemployment is slightly higher in rural areas than urban areas. In 1997, rural
unemployment was 5% compared to 6.2% in the urban labor force (RUPRI(i), 1999).

Fewer rural individuals have a baccalaureate degree or higher, 15% versus
individuals in urban settings at 29%; however, the percentage of young adults with a high
school diploma or some college is higher compared to 59% in urban areas (RUPRI(j),
1999). Likewise, there are a greater percentage of rural individuals with less than a high
school education, 24%, versus 17% of individuals residing in urban areas (RUPRI(j),
1999).

More residents in rural areas are uninsured and over represented by Medicaid and
Medicare (RUPRI(k), 1999). Correspondingly, as a whole, rural America is underserved
by primary care physicians and many health services are less available in rural areas than
in urban areas (RUPRI(k), 1999).
As outlined above, the impact of disability may be more deleterious with the rural population. All of the barriers highlight the importance of monitoring service delivery for persons with disabilities to maximize knowledge and understanding regarding services that are beneficial and services that are needed for persons with disabilities.

According to U.S. Census 2000 (U.S. Census Bureau(b), 2000), the state of Ohio falls in the middle of national statistics for rural and urban areas. Eighteen percent of Ohio’s population has a disability; only 13% of Ohio’s population is over 65 years of age but 41% report a disability; the poverty rate is 14%; one fourth of all families are headed by single females; the per capita income is $21,003; only 21% of Ohio’s residents have a bachelor’s degree or higher and 17% have less than a high school education (U.S. Census Bureau(b), 2002). Another defining demographic statistic reveals that over half of Ohio’s residents fall in the fastest growing age bracket for disabilities at 20-64 (59%) (U.S. Census(b), 2002).

There are differences between rural and urban communities that present as sources of diversity in mental health issues and services. Individuals in rural America encounters numerous barriers in receiving effective services. Some barriers are geographic, created by the problem of delivering services in less densely populated rural areas. Some barriers are “cultural,” in that rural cultures and life styles are distinct from urban life. The stigma of mental illness is much greater in rural areas than it is in urban areas (Johnsen et al., 1997). Urban culture and its approach to mental health services delivery dominate mental health services delivery in rural areas (Bird et. al., 1998). Policies and programs designed for urban mental health settings are not appropriate for rural areas.
Bird and his colleagues (1998) list a host of important differences that should be considered in reorganizing rural mental health services. In an era of specialized services, rural mental health relies heavily on primary medical care and social services. Multiple studies have documented that primary care physicians often fail to recognize and treat mental health disorders effectively (Unutzer, 1999; Lin & Unutzer, 1998; Simon, Goldberg, Tiemens, & Ustun, 1999). Likewise, in an era of expanding private mental health services, rural mental health services are predominately public funded. Consumer and family involvement in advocacy, more common in urban areas, is basically rare in rural America. There is a paucity of mental health providers in rural areas so choice is constrained. Recent state-of-the-art services delivered in urban areas are inefficient to deliver in rural areas unless there is a high volume of consumers, such as Assertive Community Treatment teams. The end result is that the impact of a mental health disability is greater in a rural setting.

Rehabilitation professionals have posited that the VR system is an urban program that practices in rural areas without considering rural realities (Carney, 1992; Rojewski, 1992). The realities of rural America include fewer employment opportunities, higher rates of unemployment, lower education levels, and less available public transportation (RUPRI(a), 1999; RUPRI(b), 1999; RUPRI(j), 1999). Empirical evidence to determine these realities or any differences between persons with a psychiatric disability in rural versus urban areas is meager. The present reporting system for the RSA 911 data prohibit the study of any delineation between urban and rural individuals receiving VR services because zip codes are omitted when processing the data for researchers (personal
communication with N. Arnold, 2002 and R. Walls, June 2002). The only recourse for
researchers is to appeal to state VR systems for their data with the inclusion of zip codes
(Personal communication with N. Arnold, June, 2002).

This study is proposing to investigate the characteristics of success for persons
receiving vocational rehabilitation (VR) services through Ohio Rehabilitation Services
Commission (ORSC) with a primary diagnosis of a mental health disorder and
investigating if there are any differences between those residing in predominately urban
and rural counties. In addition, this study is proposing to determine any statistically
significant differences in amount of total case expenditure, hourly rate, weekly hours
worked, and level of education at closure, for persons in urban versus rural counties in
the state of Ohio. A request was made to ORSC requesting 911 reporting data for fiscal
year 2002 to include county codes for this proposal. ORSC granted permission and
provided the data base with county codes. Typically, county codes are always stripped off
of the 911 reporting data.

Purpose of the Study

The purpose of this study is to determine characteristics of success for persons
with a primary diagnosis of a mental health disorder who were successfully employed
through the federal-state vocational rehabilitation (VR) program in urban and rural areas
for FY 2000 in the state of Ohio. Also, within this population, a comparison will be made
between individuals residing in urban versus rural counties to determine any statistical
significance between the two groups in amount of total case expenditure, hourly rate,
weekly hours worked, and level of education at the time the case is successfully closed (status 26).

The following sections address the significance of the problem, the problem statement, the variables that were considered, the need for the study, and the research questions and objectives. It then proceeds to address the basic assumptions of the study, the limitations of the study, and provides a definition of terms.

Significance of the Problem

Mental illness represents one of the leading causes of disability (The Global Burden of Disease, 2000). Nationwide, it is estimated that one out of four individuals is affected by mental disorders in a given year (NIMH, 2000). National data suggest that the prevalence of clinically defined mental illness among rural and urban populations is similar (National Rural Health Association, 1999) or half the rate in rural areas as compared to urban areas (LeBlanc, Kang et al. 2001). Geographic and cultural differences impact persons with a mental illness in rural areas more severely. Sparsely populated counties have less money and resources in which to implement services and programs, coupled with an increase in stigma associated with mental illness resulting in an over reliance on primary care physicians and public sources for treatment (Bird et al., 1998; Johnson et al., 1997). An over reliance on primary care physicians leads to undiagnosed and untreated mental health disorders since studies have shown that primary care physicians do not recognize or treat mental health disorders (Unutzer, 1999; Lin & Katon, 1998; Simon, Goldberg, Tiemens, & Ustun, 1999) leaving the rural population at greater risk for managing their mental illness.
No research exists outlining the predictors of successful employment for persons with a mental illness in rural areas. Research has focused primarily on what barriers exist in rural areas (Harley, Bishop, & Wilson, 2002; Harley, Rice, & Dean, 1996; Leland & Schneider, 1982; McFarlane & Griswald, 1992; Lam, Chan, Parker, & Carter, 1987; RUPRIb, 1999; Blank, Jodl, & McCall, 1996). Likewise, the debate still continues about the predictors of success for persons with a mental illness in urban settings (Anthony, Cohen, & Farkas, 1999; Bond, 1992; Bond, 1999; and Lam et. al, 2000). For individuals with a mental illness residing in rural areas the challenges of finding and sustaining employment is magnified compared to urban areas due to economic conditions such as higher unemployment, lower income, higher percentage of working poor, increased poverty, and higher percentage of persistently poor individuals (RUPRI, 1999).

Need for the Study

The concept of work having a therapeutic benefit for persons with a mental illness is relatively new. Although the federal/state vocational rehabilitation program was established in 1920, it was not until 1943 with the Vocational Rehabilitation Act Amendments (Barden-LaFollette Act) that authorization was given to serve individuals with a mental illness (Wright, 1980). Since 1943, attention has focused on increasing effectiveness of vocational rehabilitation with persons with a mental illness. A number of program models have been developed and applied to persons with a mental illness. The main vocational rehabilitation models for persons with a mental illness include: transitional employment, time limited placement and entry-level competitive jobs; supported employment, extended vocational support in competitive employment; job
club, support and learning about work skills and job hunting; the Program of Assertive Community Treatment (PACT), comprehensive community-based program with integrated clinical and rehabilitative services; and the VR system, individualized services based on need which may include some of the aforementioned services (McGurrin, 1994).

VR is the model with the longest history and serving the largest number of persons with a mental illness. The Matrix Research Institute (1992) analyzed data from the federal-state VR program covering the period 1984 through 1988. Results showed that about 53% of persons with a psychiatric disability were classified as vocationally rehabilitated at closure. Recently the federal-state vocational rehabilitation system has come under scrutiny for its failure as a viable source of vocational rehabilitation for persons with a severe mental illness. The National Alliance for the Mentally Ill (NAMI) has published a report (Noble, Jr., Honberg, Hall, & Flynn, 1999) regarding the failure of the federal-state vocational system in meeting the vocational rehabilitation needs of persons with a severe mental illness. The report challenges us to rethink where we are heading regarding policy formulation and service delivery with persons with severe mental illness.

There is no doubt that issues of public accountability are crucial in the efficacy of the federal-state VR system. However, there needs to be more reliable information gathered. We need to know which VR services received by persons with a primary diagnosis of a mental health disorder predict who will close successfully in status 26 (employed 90 days or longer) (Cook, 1999). In addition, there are many differences between urban and rural areas, yet the same standards of service delivery are utilized for
differing populations. A thorough understanding of what is working with what population will help facilitate the allocation of scarce resources now and in the future (Conley, 1999; Cook, 1999; Bond et al., 1999).

Given our lack of knowledge about what helps persons with a mental illness in rural areas successfully complete their VR program, the investigation of predictors leading to success (status 26) is significant because possible outcomes can:

1. Heighten the awareness and understanding of service delivery to persons with a primary diagnosis of a mental health disorder in rural and urban areas.

2. Enhance the understanding about types of services received by persons with a primary diagnosis of a mental health disorder in rural and urban areas.

3. Serve as a baseline for training in rural areas.

4. Provide guideline areas for training to college and universities about rural issues in the field of rehabilitation counseling. Also, findings may assist in curriculum development in areas where discrepancies exist in service delivery for persons with a primary diagnosis of a mental health disorder in rural and urban areas.

5. Provide guidelines for Ohio Rehabilitation Services Commission (ORSC) to review policies and identify counselor-training needs.

6. Provide future research guidelines for comparative studies among persons with a primary diagnosis of a mental health disorder residing in rural and urban areas and other consumers seeking assistance with VR agencies.
7. Assist the rehabilitation community in providing additional strategies to address outreach concerns for persons with mental illness residing in rural areas.

8. Assist ORSC in their work with building the rehabilitation community to meet the needs of the consumers in rural and urban areas.

Research Questions and Variables

The research questions associated with this proposal are:

Question 1: Is there a difference in the number of services received by persons with a primary diagnosis of a mental health disorder residing in urban versus rural areas whose cases have been rehabilitated (Status 26) in the state of Ohio?

Question 2: Is there a difference in the characteristics of success (Status 26) for persons with a primary diagnosis of a mental health disorder in urban and rural counties in the state of Ohio?

Question 3: Are there any differences in total case expenditure, weekly hours worked, hourly rate of pay, and level of education at close of case, between consumers successfully rehabilitated (status 26) with a primary diagnosis of a mental health disorder who reside in urban and rural areas.

Question 4: Is there a difference in types of services received by individuals residing in urban and rural areas whose cases have been closed successfully (Status 26) in the state of Ohio?
Explanatory Variables

Primary Disabling Condition. A categorical variable with three levels for mental health diagnoses: (1) Psychotic Disorders (500)(includes Schizophrenia, Bi-Polar Disorders, Delusional and Psychotic Disorders), (2) Neurotic Disorders (505)(includes Anxiety Disorders, Phobia Disorders, Obsessive-Compulsive Disorders, Personality Disorders) and (3) Depression (510)(Mood Disorders). The primary disabling condition is coded to indicate the consumer’s diagnosis at the time of application for services.

Residence. A categorical variable with two levels (Urban or Rural). Residence will be defined by county code identified by RSC 911 Reporting Form.

Education at referral. A multichotomous variable with five levels: (a) less than high school degree, (b) high school graduate, (c) some college, (d) college degree, and (e) some school post college graduation. Education refers to the highest level of education completed at referral.

Education at case closure. A multichotomous variable with five levels: (a) less than high school degree, (b) high school graduate, (c) some college, (d) college degree, and (e) some school post college graduation. Education refers to the highest level of education completed after VR services.

Work status at referral. A multichotomous variable coded with 9 levels: (a) competitive labor market, (b) sheltered workshop, (c) self-employed, (d) state agency managed, (e) homemaker, (f) unpaid family worker, (g) not working –student, (h) not working –other, and (i) not working-trainee or worker in non-competitive employment.
Work status best defines the work activity performed by the consumer one week prior to application for VR services.

Criterion Variables

Type of services received: A categorical variable with two levels (yes or no). The type of services received (a categorical multichotomous variable with 12 levels). Types of services are defined by RSA (2001) as:

1. Diagnostic (assessment): Services required to determine eligibility or to determine need for other services.

2. Restoration: (physical and mental): Services needed “to correct or substantially modify a physical or mental condition” (RSA, 2001, p. 33), such as surgery, therapy, or treatment.

3. College/University Training: Academic schooling beyond high school.

4. Business and Vocational Training: Non-college post secondary schooling, where a baccalaureate degree is not offered.

5. On-the-job Training: Training with a specific employer where the person earns wages while in training and where it is expected that, if training is successful, the person will remain on the job or go to a similar job.

6. Miscellaneous Training: Training not identified above, such as secondary school level of academic training at specialized schools for persons who are deaf or blind or both.

7. Counseling: Substantial counseling by VR counselor; however, substantial is not formally defined by RSA.
8. Job Referral (Job Finding Services): The provision of information regarding a job that allows a person to contact employers on his or her own.

9. Job Placement: Occurs when a person is referred to an employer and hired. Job placement differs from a job referral in that for a job placement to occur, the person must be hired and not merely in contact with employer.

10. Transportation: Provided to allow the client to meet appointments for assessment, training, or other services.

11. Maintenance: Services provided to finance additional costs while receiving rehabilitation services.

12. Other services: Services not included elsewhere. Examples are occupational tools and equipment, initial stocks and licenses, auto repairs, or services to family members.

It is of importance to note that Adjustment Services are typically available and recorded if a consumer receives those services; however, for the data recorded in FY 2002 Adjustment Services are not recorded and are missing for the entire population.

Successful closure (Status 26). Defined as remaining employed for at least 90 days.

Hourly wage (at successful closure: Status 26). The pay rate per hour of consumer when their case is closed successfully (status 26).

Weekly hours worked (at successful closure: Status 26). The amount of hours that consumer is working on a weekly basis at the time their case is closed successfully (status 26).
Total case expenditure (at successful closure: Status 26). The amount of money spent for services for the consumer from opening of case to successful closure of the case (status 26).

Basic Assumptions

This study will assume that the completed RSC-001 data sheets accurately reflect data recorded by RSA counselors and that the subsequent compilation of the data by RSA was valid and reliable. Any coding and recording error is assumed to be random error and therefore not expected to significantly affect the data analysis outcomes. It is further assumed that individuals with a severe mental illness have met the required criteria by Rehabilitation Services Administration standards to qualify for such coding. This study will make no assumptions about causality and will only attempt to describe relationships between variables. Finally, this study will assume that research permission would be granted through the Human Subjects Review Committee at The Ohio State University, Columbus, Ohio since data is anonymous.

Limitations of the Study

External validity as reported by Campbell and Stanley (1963), “always turns out to involve extrapolation into a realm not presented in one’s sample” (p.17). This study contains the following threats to external validity:

1. This study only includes the self-selected sample of individuals with a severe mental illness who voluntarily sought vocational rehabilitation services through the Ohio Rehabilitation Services Commission during FY 2002. Although it is expected that consumers in this program are similar in nature to
the target population of all persons with a severe mental illness attending vocational rehabilitation programs nationwide, results are not generalizable to all persons with a severe mental illness.

2. It is not determined that all persons receiving VR services with a severe mental illness have the same level of severity of symptoms during the vocational rehabilitation process, so there will be no attempt to answer why some persons with a severe mental health disorder are successful in their vocational rehabilitation and others are not.

3. This study is limited to persons with a primary diagnosis of a mental health disorder in Ohio so the results of this study will not be able to be extrapolated to all persons with a disability.

4. This study will contain non-controlled external factors such as the skill level of the vocational rehabilitation counselors, local employment opportunities, or quality of service providers. Similarly, this study’s focus will be on employment outcomes (Status 26) and does not allow for other measures of individuals’ improvement outside the employment status as defined by the Rehabilitation Services Administration.

5. This study will be limited by the accuracy of those individuals completing the data form. Vocational rehabilitation counselors complete the RSC-001 data form when a consumer’s case is closed. Some data may be coded inaccurately: there may be errors due to utilization of memory, inaccurate data in case file, not utilizing the case file in completing RSC-001 form, not following the coding instructions, not understanding the coding instructions
and making inaccurate interpretations, and there may be errors in recording
the supplied data on RSC-001 form from data entry personnel at the state
level. An unknown number of errors may exist in the data. RSA has
developed 18 cross checks to overcome some of these coding problems.
Errors will assume to be random and present no systematic bias in the data.
6. This study does not include a control group and the ability to measure the
results of certain types of services in an experimental design. Conclusions
drawn must be tentative explanations and are not to be interpreted as causes.

Internal Validity

The major threat to internal validity with a causal-comparative study is the
possibility of a subject-characteristics threat (Fraenkel & Wallen, 1993, p. 322). For
example, the age, gender, and ethnicity may influence certain services received. The
researcher will minimize the internal threat by making sure that subjects have no missing
data on the characteristics under investigation.

Definition of Terms

The following terms were determined to need further clarification:

Current Population Survey (CPS): A monthly survey of about 50,000 households
conducted by the Bureau of the Census for the Bureau of Labor Statistics. The survey has
been conducted for more than 50 years. The CPS is the primary source of information on
the labor force characteristics of the United States population. The sample is scientifically
selected to represent the civilian noninstitutional population. Respondents are interviewed
to obtain information about the employment status of each member of the household 15 years of age and older. The sample provides estimates for the nation as a whole and serves as part of model-based estimates for individual states and other geographic areas.

**Disability:** A person has a disability if he or she has an inability or a limitation in the amount or kind of major activity that he or she can do or is limited in any other activities in any way. Major activities include roles common to ones age group, such as school, work, and self-care. Other activities include social, community, and leisure activities.

**Individuals with severe mental illness (SMI):** An individual who has a severe mental illness is considered severely impaired if he or she meets the following criteria: the person’s disability seriously limits one or more functional capabilities in terms of employability, such as: communication, interpersonal skills, mobility, self-care, self-direction, work skills or work tolerance; and the individual is expected to need multiple VR services over an extended period of time; and the individual has one or more disabilities that cause substantial functional limitations resulting from any condition, including mental illness (Rehabilitation Services Administration). The federal-state VR system divides individuals with mental illness into one of three categories, based on diagnosis: psychotic, neurotic, and other mental/emotional disorders.

**Rural and Urban:** Often when researchers are discussing “rural” America, they are typically referring to conditions in nonmetropolitan areas (Jordan & Hargrove, 1987). Metropolitan and nonmetropolitan areas are defined on a basis of counties. For this research, the definition utilized by the Economic Research Service with the United States Department of Agriculture (2000) will be applied to the Ohio data:
“Metropolitan counties areas contain core counties with one or more central cities of at least 50,000 residents or with a Census Bureau defined urbanized area (a total metro area population of 100,000 or more) and fringe counties that are economically tied to the core counties. Nonmetropolitan counties are outside the boundaries of metro areas and all have no cities with as many as 50,000 residents.”

According to the Ohio Department of Development, Office of Strategic Research (2000), Ohio has 41 metropolitan counties and 47 nonmetropolitan counties.

The Survey of Income and Program Participation (SIPP): The United States Census Bureau (1998) describes the SIPP survey:

The purpose is to collect source and amount of income, labor force information, program participation and eligibility data, and general demographic characteristics to measure the effectiveness of existing federal, state, and local programs; to estimate future costs and coverage for government programs, such as food stamps; and to provide improved statistics on the distribution of income in the country. The survey design is a continuous series of national panels, with sample size ranging from approximately 14,000 to 36,700 interviewed households. The duration of each panel ranges from 2½ years to 4 years. The SIPP content is built around a “core” of labor force, program participation, and income questions designed to measure the economic situation of persons in the United States. All household members 15 years old and over are interviewed by self-response, if possible; proxy response is permitted when household members are not available for interviewing.

Status 26: When an individual has completed 90 days of employment successfully, his or her case is closed by RSA, status 26.

Vocational rehabilitation services: Categories of vocational rehabilitation services rendered by RSA include: diagnostic, restoration, college, business/vocational training, on-the-job training, miscellaneous training, substantial counseling, job referral, job placement, transportation, income maintenance, and other services.
Summary

This chapter briefly describes the incidence of unemployment among individuals with a severe mental illness (SMI). It also highlights the moderate data on the effectiveness of vocational rehabilitation programs and points out that more data is needed. Specifically, researching the relationship between successful closure rate for both urban and rural populations with a severe mental illness.
CHAPTER 2
REVIEW OF THE LITERATURE

Introduction

The purpose of this study is to investigate the predictors of success for vocational rehabilitation services provided through the federal-state vocational rehabilitation system to individuals with a severe mental illness in urban and rural areas and the relationship of these services to successful employment outcome. Additionally, this study will examine any differences between the urban and rural population with a primary mental health disorder in total case expenditure, weekly hours worked, hourly rate of pay, and level of education at case closure. From this research, VR services effectiveness related to employment outcomes will be identified for urban and rural areas and program development will be recommended.

This chapter presents a review of the literature arranged in the following areas: (a) psychiatric rehabilitation; (b) psychiatric rehabilitation in rural areas; (c) barriers to vocational rehabilitation for persons with a severe mental illness; (d) predictors of success for vocational rehabilitation in persons with a mental illness; (e) predictors of success for vocational rehabilitation in persons with a mental illness in rural areas; (f) the federal-state vocational rehabilitation system and the effectiveness of their services for individuals with severe mental illness in urban and rural areas.
Psychiatric Rehabilitation

Psychiatric rehabilitation, also known as psychosocial rehabilitation, is a comprehensive strategy for meeting the needs of persons with severe and persistent mental illness. Anthony (1979) described psychiatric rehabilitation as emerging from the basic model of the physical rehabilitation model: impairment-disability-handicap and comprised of two intervention strategies: consumer skill development and support development. The guiding principle in this model suggests that by developing skills and competencies while having environmental supports a person with a severe and persistent mental illness will be better able to function in their social and vocational roles (Rogers, Anthony, & Jansen, 1988). Rutman (1993, p.1) describes psychiatric rehabilitation as “giving people with psychiatric disabilities the opportunity to work, live in the community, and enjoy a social life, at their own pace, through planned experiences in a respectful, supportive, and realistic atmosphere.” Both definitions have common principles. Both definitions focus on a wholistic perspective and treatment of the individual, including social and vocational aspects. Both definitions also focus on the supports necessary for individuals to be successful socially and vocationally.

Based on the above definitions, it may be assumed that the role of work in psychiatric rehabilitation is a key component for successful integration and stability. The meaning of work for most adults falls close to the parallel that Freud, and later psychoanalytic career psychologists, refer to work as an activity that provides a sense of self and well-being. With this in mind, the focus of this chapter will be on the role of work in psychiatric rehabilitation.
Often times the major development of psychiatric rehabilitation is attributed to the deinstitutionalization movement of persons with a mental illness from state hospitals into the community starting in the 1950’s. Factors that led to the movement include the discovery of psychotropic medications and public statements reporting the negative conditions of the state hospitals starting in the 1940’s (Anthony & Blanch, 1987). The new philosophy was toward early discharge from the hospitals and follow-up treatment in the community. Legislation soon followed the movement with The Joint Commission on Mental Illness and Health set up by Congress in 1955, and then later in 1963, saw its legal counterpart in the Kennedy Mental Health Act of 1963 (Neff, 1988, p. 14).

The professionals that were able to deal with the discharged individuals were vocational rehabilitation counselors (Rogers, Anthony, & Jansen, 1988). The reliance on vocational rehabilitation counselors precipitated a heavier focus on work as a part of the rehabilitation process for persons with a mental illness. Some of the most popular programs that were developed to assist in the vocational rehabilitation of persons with a mental illness included a club house model and transitional employment, Assertive Community Team (ACT), and supported employment. The next section will describe the aforementioned programs and outcome studies on the programs.

Clubhouses and Transitional Employment

The best known clubhouse is the first clubhouse: The Fountain House was established in New York City in 1948. The original goal of the clubhouse model was to help individuals with a mental illness adjust to living in the community. The clubhouse became a central meeting place where “members” could get together and socialize. However, soon after the inception of the clubhouse, work became a major focus and two
key vocational concepts were developed: the work-ordered day and transitional employment (TE). Including work as a major focus grew from the belief that part of psychosocial rehabilitation involved a day treatment program that would build prevocational skills. Members were encouraged to choose an area in the clubhouse in which they wanted to work. Available options included: serving and food preparation in the dining room and snack area, cleaning, office work, writing and printing a newsletter, answering telephones, giving tours, or outreach to new members, or hospital and home visits (Bean & Beard, 1975). The hypothesis was that “members” benefited from completing the work necessary in keeping the clubhouse functioning. Specifically, members would feel of value as they contribute to the functioning of the clubhouse.

The Fountain House implemented a Transitional Employment Program (TE) in 1958 after recognizing that there were some barriers to competitive employment for persons with a severe and persistent psychiatric disorder. There are no prerequisites for TE; members participate based on their stamina level and their ability to manage stress. TE afforded members the opportunity to build and strengthen work skills, motivation, and attitudes necessary for the work force (Bean & Beard, 1975). TE typically consists of temporary, part-time, entry-level community jobs provided to the clubhouse by local employers (Bilby, 1992, Macias, Jackson, Schroeder, & Wang 1999). TE jobs are not meant to be permanent. TE jobs are meant to help members build successful work habits, vocational skills, and explore employment options. Clearly, the underlying philosophy was based on the belief that if individuals were trained and prepared enough before they entered into competitive employment, they would be more successful at competitive employment once they started.
Studies are mixed about whether TE has demonstrated that it is a viable program to help persons with a severe and persistent mental health disorder find competitive employment. Unfortunately, there are few studies that examine the outcome of competitive employment after completing a TE program. Studies that have specifically documented competitive employment rates post TE range from 8% to 42% (Bond, Dincin, Steze, & Witherideg, 1984; Cook & Razzano, 1995; Henry, Barreira, Banks, Brown, & McKay, 2001; Laird & Krown, 1991; Malamud & McCrory, 1988). A common denominator in all of these studies is that as the follow-up period increases so does the rate for those competitively employed. The range of follow-up for the aforementioned studies was nine (9) months to forty-two (42) months. These studies were not designed to identify possible correlations between the increases of competitive employment rates as more time elapsed post TE. Thus, it is unclear if other factors or the training itself facilitated the increase in competitive employment.

Fountain House completed a longitudinal study and reported findings similar to the aforementioned studies: rates for competitive employment were positively correlated with increases in the follow-up period: 11% at twelve months, 19% at twenty-four months, and 36% at forty-two months (Rehab Brief, 1986). Another study (Bond & Dincin, 1986) compared a gradual TE program with an accelerated TE program and reported no difference between the two groups at nine (9) months; however, there was a substantial difference in employment rates at fifteen (15) months for the two groups: the gradual program participants had a 7% employment rate compared to 20% for the accelerated group. Since the studies were not designed to identify possible factors that lead to competitive employment the longer one is out of TE, a researcher may only draw
their own inconclusive hypothesis. Perhaps the results reflect research findings that report previous work history and experiences is a predictor of competitive employment (Anthony & Jansen, 1984; Mowbray & Bybee, 1995; Reker, Eikelmann, & Inhester, 1992).

Assertive Community Treatment (ACT)

Assertive Community Treatment (ACT) model for persons with severe mental illness was developed in Madison, Wisconsin by Leonard Stein and Mary Ann Test in the early 1970’s (Stein & Test, 1980). It is important to note before discussing ACT any further that ACT is also known by several other names. These other names are program of assertive treatment team (PACT), assertive outreach, mobile treatment teams, and continuous treatment teams. For the purposes of this paper, these names are considered interchangeable and the term used to describe this program type will be ACT.

Stein and Test provided eleven critical principles of their program which have been verified by experts working in this field (McGrew & Bond, 1995; Test & Stein, 1976). The eleven key principles are: multidiscipline staffing, integration of services, team approach, low consumer-staff ratios, locus of contact in the community, medication management, focus of everyday problems in living, rapid access, assertive outreach, individualized services, and time-unlimited services. A brief summarization of ACT involves a hands-on multidiscipline holistic team approach focused on getting and keeping the consumer involved in their treatment process to promote management of medications and everyday activities, including employment. Additionally, these services are to be provided as long as the services are needed. It is important to note that a full
staff includes psychiatrist, nurse, social worker, and rehabilitation counselor (Bond, Drake, Mueser, & Lattimer, 2001).

Numerous studies have looked at the effectiveness of ACT and concluded that ACT increases the community integration of people with severe mental illness. Bond and colleagues (2001) reviewed twenty-five randomized controlled trials of ACT and reported that the effectiveness of ACT was in its ability to decrease psychiatric hospital use, increase housing stability, and a moderate improvement in medication management, symptoms, and quality of life. However, there was little impact on social functioning, substance use, arrests, and vocational functioning (Bond, et al., 2001).

If, indeed, a rehabilitation counselor is a part of the team then one would expect researchers to find that ACT has an impact on vocational functioning. However, most programs fail to utilize a vocational specialist. Salyers and colleagues (2003) applied the Dartmouth Assertive Community Treatment Scale to 51 ACT programs to measure their compliance with the intended program implementation, such as utilizing appropriate specialist. Only fourteen (14) or 28% of the programs met the criteria for utilizing a vocational specialist. Likewise, Salyers and colleagues (2003) compared the results of the ACT programs to 25 intensive case management programs and 11 brokered programs with very similar results. Nine (9) or 36% of the 25 intensive case management teams met the criteria for utilization of a vocational specialist and zero of the brokered programs utilized a vocational specialist, they referred all services out to other providers. Clearly, there may be multiple reasons why providers fail to comply with all aspects of ACT’s intended program implementation. However, until programs utilize the intended specialists, the outcome studies for competitive employment are tenuous at best.
A more recent study leads to more consternation regarding the implementation of ACT. Furlong and colleagues (2002), report that they engaged in a ‘blended model’ of ACT and Supported Employment (SE) by adding a vocational specialist to the staff team. This blended model was compared to a group of individuals only receiving services through the ACT model. Their findings indicate that those who received services with a vocational specialist had more positive employment outcomes. These researchers clearly thought that including a vocational specialist was not a part of the ACT program.

One item is clearly demonstrated in the research which may help explain the programs popularity, ACT helps to decrease hospitalizations, one of the costliest services for persons with severe mental illness. Latimer (1999) analyzed several studies seeking to determine the cost effectiveness of ACT and reported that multiple studies reported ACT to be cost effective. Recognizing that ACT has many positive effects, many states have incorporated ACT into statewide policy. The National Alliance for the Mentally Ill (NAMI) started heavily promoting ACT in 1996 and wanted ACT in all 50 states by 2002 (NAMI, 1998). Likewise, in recognition to save hospitalization dollars, President Clinton requested that the Health Care Financing Administration (HFCA) authorize ACT to be reimbursed by Medicaid (News & Notes, 1999).

ACT programs, unless fully implemented as Stein and Test (1980) originally suggested, fail to improve the competitive employment rates of persons with a severe mental health disorder. Reducing hospitalization costs is obviously an important feat for any program. However, increasing competitive employment rates for person with a severe mental illness is just as important.
Supported Employment

Supported employment (SE) was originally developed in the 1980’s to facilitate competitive employment for persons with developmental disabilities. The impetus behind SE was borne out of a frustration that the current services: sheltered workshops, mobile work crews, and enclaves; often, did not lead to competitive employment for persons with severe disabilities. One of the underlying philosophies originally outlined in SE was to repudiate the idea that intensive training needed to occur for an individual with severe disabilities before becoming competitively employed. The new emphasis was on placing the individual in competitive employment then training them for that specific job and that specific setting.

Administrators and policy makers quickly included SE into legislation signifying its importance. The Developmental Disabilities Act of 1984 (P. L. 98-527) mandated addressing employment as a major priority, and SE was specifically identified as one of the employment related activities defined. A year later, Congress appropriated $3.7 million for supported work leading to the development of SE Demonstration Projects in ten states that were jointly funded by Office of Special Education and Rehabilitation Services (OSERS) and the Administration on Developmental Disabilities (Anthony & Blanch, 1987). This initiative was so successful that in 1986 it was expanded to 27 states.

Mental health professionals were experiencing some of the same frustrations as those individuals working with persons with a developmental disability. The established programs (mentioned above) were successful to a point but, as previously mentioned, not facilitating and maintaining competitive employment at acceptable rates. The Rehabilitation Act Amendments of 1986 outlined a formal definition of SE with three
main components: paid employment with prevailing wages in an integrated setting and ongoing job support (Rubin & Roessler, 2001). These goals were already in line with the goals of psychosocial rehabilitation so it did not take long for mental health professionals to adopt SE. Plus, SE as outlined, operates on the assumption that all persons, regardless of level of severity of disability, can become employed with the right supports. The responsibility to increase competitive employment rates was now on the provider and not on the consumer.

Unlike legislation for persons with developmental disabilities, there was never a focus on transitional services for persons with a mental health disorder, as such; the mental health legislation has been slow to focus on employment. Precursors that helped the advancement of SE for persons with mental illness include several policy initiatives. Perhaps the first was in 1975, when the National Institute of Mental Health (NIMH) developed the concept of a ‘Community Support System’ (CSS). The purpose behind CSS was to provide the necessary supports to persons with severe mental illness so they could live in the community and be productive (Anthony & Blanch, 1987). For the first time, employment was an important issue.

The second major precursor was a collaborative agreement between the Rehabilitation Services Administration (RSA) and NIMH. The agreement led to two major advances: one was funding two Rehabilitation Research and Training Centers focused on psychiatric disabilities; and the second was an interagency cooperative agreement between RSA, NIMH, the National Institute on Handicapped Research, and the Council of State Administrators of Vocational Rehabilitation (Anthony & Blanch,
The first of the training centers was the Center for Psychiatric Rehabilitation at Boston University established in 1979 led then, and currently, by William Anthony. Additionally, or perhaps concurrently, the body of literature and research in promoting competitive employment for persons with psychiatric disorders that was being led by the Center for Psychiatric Rehabilitation at Boston University was highlighting the ineffectiveness of prevocational training and focusing on immediate employment as demonstrated by the Choose-Get-Keep approach developed by Anthony, Howell, and Danley (1984). The philosophy underlying this model is aligned with the goals and philosophies of SE. The Choose phase matches the pre-employment component, the Get phase matches the placement component, and the Keep phase matches the support component (MacDonald-Wilson, Mancuso, Danley, & Anthony, 1989).

Research and concerted efforts of psychosocial programs culminated in 1986 when the International Association of Psychosocial Rehabilitation Services (IAPSRS) collaborated with other national organizations to give input to amendments to the Rehabilitation Act of 1973 to expand the definition of employment to include part-time, emphasized the need for functional assessments, and created a separate grant program for SE and TE services (Anthony & Blanch, 1987).

There are two main categories of SE: group models and individual placement and support (IPS). The IPS model is used the most, 79% of placements nationwide fall into this category (Wehman, Revell, & Kregel, 1998). The IPS model was developed by Becker and Drake (1994) so that an employment specialist links with the treatment teams within a mental health center to collaborate with clinicians to ensure that employment is a part of the treatment plan if the consumer chooses.
The initial study of IPS developed out of a natural experiment in New Hampshire. A mental health center closed their day treatment program and replaced it with an IPS SE program while using a local day treatment program as a comparison. Within one year from the change to IPS, competitive employment rates increased from 33% to 56% while the comparison day treatment center went from 14% to 9% rate of competitive employment (Drake, Becker, Biesanz, Torrey, McHugo, & Wyzik, 1994). A replication study was completed a year later with very similar results, competitive employment rates increased from 9% to 40% (Drake, Becker, Biesanz, Wyzik, & Torrey 1996).

Other studies have shown that SE is a good intervention at increasing competitive employment for persons with a mental illness. Rhode Island completed a similar study in changing two of their day treatment centers into IPS programs with amazing results. Their rates for competitive employment rose from 0% to 44% and 60% while consumers in comparison programs had no increase in competitive employment rates during the study period (McCarthy, Thompson, & Olson, 1998). Additionally, the researchers wanted to examine the possibility that the training and experience in day treatment was facilitating the increase in competitive employment rates. They compared a group with no day treatment experience and new to the community support model to a former day treatment group and discovered that the group with no day treatment experience increased their rates of competitive employment 50% quicker than the former day treatment group (McCarthy, Thompson, & Olson, 1998).

As researchers tried to determine how valid the competitive employment rates were with a SE model they also compared SE to traditional vocational programs that focused on work readiness and training then placing a consumer in competitive
employment. Studies in New Hampshire and Washington, D.C. yielded very similar competitive employment rates of for IPS program consumers, 61% and 78%, versus 40% and 9% for comparison groups (Drake, McHugo, Becker, Anthony, & Clark, 1996; Drake, McHugo, Bebout, Becker, Harris, Bond, & Quimby, 1999). Similar findings were also found in Connecticut when comparing the IPS model to Standard Services (community support with no employment specialist or enclave) and Psychiatric Rehabilitation Center (TE, social skills development, and recreation). The rate of competitive employment was 75% for IPS, 28% for Standard Services and 18% for Psychiatric Rehabilitation Center (Mueser, Becker, & Wolfe, 2001).

Bond and colleagues reviewed seventeen studies examining the effectiveness of SE for people with severe mental illness. Overall, the studies reported significant gains in competitive employment (Bond, Drake, Mueser, & Becker, 1997). An example of competitive employment rates for a study group versus a comparison group include is 56% to 29% (Bond, Dietzen, McGrew, & Miller, 1995). Another study had competitive employment rates of 76% for SE consumers and 6% for comparison group (Gervey & Bedell, 1994) but the comparison group was sheltered workshop employees and the study group completed one month of prevocational training. Albeit, the results are amazing, but do the results speak more about the positive benefit of SE or the lack of success for sheltered employment?

An additional positive benefit found with SE includes higher monthly income than those individuals who received prevocational training (Bond et al., 1995; Drake, McHugo, Becker, Anthony, & Clark, 1996; Drake, McHugo, Bebout, Harris, Bond, & Quimby, 1999). There appear to some mixed results in regards to program cost for SE.
Bond et al (1995) found that program costs for SE were higher than those for prevocational training; however, Drake et al (1996 & 1999) found the programming cost of SE and prevocational training to be about equal.

Not all studies have reported positive results. Some studies have reported low competitive employment rates. One such study (Chandler, Meisel, Hu, McGowan, & Madison, 1997) either provided their usual services, including TE, or their consumers were referred to VR services. They collected data for three years and did not find any differences in the SE group or comparison group until the second year. The competitive employment rates for both groups at the end of the first year was the same at 12%, at the end of the second year the rates were 16% (SE) and 7%, and at the end of the third year the rates were 20% (SE) and 6%. Cook and Razzano (1995) found that consumers who sought and maintained sheltered employment were less likely to achieve competitive employment. Bond (1998) posits that if programs offer an assortment of programming options or they do not focus solely on immediate placement into competitive employment experience less success with SE and lower competitive employment rates for their consumers.

**Psychiatric Rehabilitation in Rural Areas**

Much has been written about the disparities between urban and rural areas in health care and mental healthcare for persons with a mental illness. Many researchers have reported that rural mental healthcare lacks the quality and quantity of mental health providers needed to treat the population effectively (Murray & Keller, 1991; Stuve, Bird, & Hartig, 1989). Moreover, 40% of psychiatrists and psychologists in rural areas are located in hospitals; whereas, only 18% of psychiatrists and psychologists in urban
settings are hospital based (U. S. Department of Health and Human Services, 1986). Alarmingly, mental health services and treatment by mental health professionals is dependent upon the stability of rural hospitals. Recruiting and maintaining rural providers are now even more challenging due to the competition for Primary Care Providers and loss of hospitals in many rural areas (Geyman & Hart, 1994; RUPRI(k), 1999). Meyer (1991) reports that only 20% of individuals in rural America with a mental health disorder are treated by a mental health care worker, the rest of the population seeks treatment with a primary care physician.

Other researchers have concluded that the disparity between urban and rural areas in mental health treatment is not directly the result of lack of good providers. Some researchers attribute low usage of mental health treatment to social factors (e.g., poverty, low levels of education, ignorance of mental illness and treatments available) (RUPRI(f)(j), 1999), geographic and climatic conditions that limit access to health care facilities, demographic factors (e.g., limited population base, costs), socioeconomic factors (conservative culture, limited resources) (Human & Wasem, 1991) and interpersonal and ideological factors (lack of anonymity and stigma of mental illness) (Bachrach, 1983, Rost, Smith, & Taylor, 1993).

Likewise, inherent characteristics of the rural population present with some barriers to mental health treatment such as valuing self-reliance and solving one’s own problems, denial, and isolation (Pulakos & Dengerink, 1983; Pothier, 1991). It has also been found that rural communities have a strong sense of identity to family, church, and community (Kane & Ennis, 1996; Voss, 1996), thus, relying, predominately, on natural supports to maintain symptoms and functioning level. Albeit, it is recognized that natural
supports may also serve as a positive influence, not solely as a barrier. Perhaps reliance on self, family, church, and community may lead to some of the research that indicates persons with a mental illness in rural areas tend to engage in more leisure and social activities than urban consumers (Chu, Sallach, & Klein, 1986) and fewer job-related activities (Blank, Jodl, & McCall, 1996; Sommers, 1989).

Lack of funding is another common factor identified in the literature as creating a barrier for persons with a mental illness receiving treatment in rural areas (Hargrove & Howe, Jr., 1987; Human & Wasem, 1991; Kane & Ennis, 1996; Shelton, Merwin, & Fox, 1995; Stout, 1998). The initiation of federal funding for rural mental health services started in 1963 with the passage of the Community Mental Health Centers Act (P.L. 88-164, Title II), which authorized the establishment of community mental health centers (CMCH). Ten years after the passage of P.L. 88-164, there was more than 500 CMCH’s and 40% served catchment areas with at least one or more rural counties. However, OBRA of 1981 (P.L. 97-35) mandated the transfer of the CMCH’s from federal control to states responsibility. At the same time this occurred, the National Institute on Mental Health (NIMH) reorganized their mission to move away from focusing on services to focus on research and the rural focal person retired leading to less interest in rural issues (Human & Wasem, 1991).

One of the major funding areas involves reimbursement for services. In 1987, OBRA (P.L. 100-203) expanded outpatient services provided by licensed psychologist to be covered by Medicare and Medicaid. In 1989, OBRA expanded the type of mental health professional that could be reimbursed for outpatient services to include licensed independent social workers. Additionally, Medicare allowed outpatient services that were
provided by counselors and clinicians that were not licensed independently, to be reimbursted when supervised by a licensed psychologist with a terminal degree. Recently, Medicare has made attempts to eliminate some of the built in flexibility to their reimbursement policies but much public outcry has stopped the process. One of the main reasons clinicians fight the decrease so much is due to the challenge in finding providers in rural areas.

A paucity of information exists about the types of programs in rural areas to treat persons with a mental health disorder. The most researched and written program is the Program of Assertive Community Treatment (referred to as PACT or ACT). PACT was originally developed in the urban setting. Santos and colleagues (1993) examined the effectiveness of PACT in a rural setting in South Carolina. They were able to demonstrate a reduction of 75% in the mean length of stay for hospital admissions during the study period, resulting in a savings of six thousand dollars per consumer. However, the researchers stated that because vocational and residential alternatives are limited they cannot focus on independent living or employment.

Another urban program that has inherent barriers for the rural area is the mental health consumer movement. Consumer groups such as National Alliance for the Mentally Ill and Mental Health Association have demonstrated little interest in rural areas; yet flourish with activities and membership in urban areas. Oddly enough, the strength of the rural communities having a stronger sense of family, church, and community is well reported (Kane & Ennis, 1996; Voss, 1996); however, this natural support formally developed and integrated into treatment programs is not discussed in the literature. The great paradox is that the stigma attached to a mental health disorder in rural areas
precludes participation in treatment, in general, so of course the stigma would also interfere with any potential consumer movement.

**Barriers to Employment Among Persons with Mental Illness**

The literature is replete with research indicating a relationship between mental illness and employment related disability. Persons with mental illness comprise the largest diagnostic category among working aged adults who receive Supplemental Security Income (SSI) or Social Security Disability Insurance (SSDI) (McAlpine & Warner, 2003). The literature on barriers to employment may be broken down into four major categories: illness characteristics; consumer characteristics; access to care, service use, and treatment; and characteristics of labor markets, work, and employer attitudes (McAlpine & Warner, 2003).

**Illness Characteristics**

Understanding how mental illness presents as a barrier to employment lies in understanding how the disorder translates into a work disability. As mentioned previously, earlier studies have highlighted that diagnosis nor symptoms predict who has a greater chance of successfully becoming competitively employed. Thus far, based on research, understanding how a mental illness leads to work disability is speculative at best. Early age of onset, for example, interferes with educational and career attainment (Kessler, Foster, Saunders, & Stang, 1995). Often the disorders categorized with the severe and persistent label such as Schizophrenia and Bipolar disorder are first experienced in late teens to early adulthood (DSM-IV-TR, 2001). These disorders tend to interfere with the exploration stage of career development which may then hinder or slow
progress towards employment. Individuals who are first diagnosed in their youth tend to be less employed when they are older and use more sick time (Vander Stoep et al., 2000).

An additional challenge is the chronic and cyclical nature of mental health disorders. Anthony and colleagues have concluded with several studies that the level of functioning, not symptoms or diagnosis, interferes with employment (Anthony 1994; Anthony & Jansen, 1994; Anthony, Rogers, Cohen, & Davies, 1995; Buell & Anthony, 1973). Persons with a severe mental health disorder often present with impairments in cognitions, perceptions, affect, and interpersonal areas. Specifically, individuals may have difficulty in concentrating, attending, with memory, insight, poor impulse control, poor perception of reality, hostility, sadness, anxiety, fear, and deficits in work performance such as appropriate grooming, task performance, and following directions.

Most employers prefer their employees to present with consistent skills and abilities which is often challenging when one’s level of functioning vacillates.

Consumer Characteristics

The same demographic characteristics that are related to unemployment for the general population also apply to persons with a severe mental health disorder such as older in age, gender, and less education (Schechter, 1997). Despite the similarities, there appears to be some evidence that these characteristics may be exacerbated by the presence of a severe mental health disorder. There are greater proportions of persons who are older with a disability and unemployed and greater differences between European Americans and minorities who have a severe mental health disorder compared to those with no mental health disorder (Yelin & Cisternas, 1997). Also, as stated earlier, the rural
population is older and more ethnic diverse (RUPRI, 1999) so the impact of disability becomes a greater employment barrier.

Access to Care, Service Use, and Treatment

Perhaps one of the most written about barriers to employment for persons with a mental health disorder involves fear of losing benefits. Professionals have lobbied effectively for policy change to decrease the barrier; however, many persons with a mental health disorder receiving assistance (SSI/SSDI) are unaware of the policies that protect their benefits as they return to employment (Growick, 2001). Without benefits or decreased benefits the fear is that treatment options will not be available.

Persons with a mental health disorder are typically referred to vocational rehabilitation services by professionals that provide some aspect of mental health treatment. However, it is not uncommon for vocational and mental health providers to perceive individuals with a mental illness as incapable of competitive employment (Rutman, 1994). Part of the reluctance for mental health providers to refer their consumers to the state-federal VR system may be due to the lack of trust or belief that the VR system can effectively assist the population in obtaining and maintaining competitive employment. NAMI (1997) has publicly voiced a vote of no confidence for the state-federal VR system to successfully (status 26) rehabilitate persons with a mental health disorder. Perhaps both sides may need to refocus on the vocational services provided to persons with a mental health disorder to better understand what leads to greater rates of success with competitive employment.
Characteristics of Labor Markets, Work, and Employer Attitudes

History has indicated that as employment rates have increased, the employment rates for persons with disabilities have also increased. However, the trend has not held true since the early 1990’s (McAlpine & Warner, 2003). During the 1990’s, the labor market demand focused on skilled, technical, and professional positions. Unfortunately, persons with a mental health disorder tend to be predominately employed in unskilled or low-skilled positions (Finch, 1997).

If the labor market pool is high and the job availability is low, persons with a mental health disorder will experience deleterious effects. The stigma attached to mental illness is often times too great to overcome. Employer attitudes towards persons with a mental health disorder are alarming. Laird (1990) reported that employers preferred to interview a person who previously had been incarcerated versus interviewing a person who had spent time in an inpatient setting. Additionally, Schneid (1998, 1999) has reported that employers also demonstrate a preference to hire persons with a physical disability instead of a mental health disorder.

There were several other policy changes during the 1990’s that may impact the employment of persons with a mental health disorder. Much attention and focus was on welfare reform which came with the Workforce Investment Act and the Ticket to Work initiatives. Noble (1998) posits that employers have preferred to hire an individual associated with the aforementioned initiatives which may have had a deleterious effect on persons with a severe mental health disorder.
Predictors of Success in VR for Persons with a Mental Illness

The first Rehabilitation Research and Training Center in Mental Health was established in August of 1979 in Boston. Historically, being able to understand the predictors of success for vocational rehabilitation for persons with a mental illness helped professionals target who to serve. Likewise, predictors helped clients and professionals work toward starting points for work readiness. Keep in mind that the goal was not necessarily one of exclusion but rather one of increasing success for the client. Professionals were keenly aware of the need to avoid setbacks in psychiatric stability. Today, predictors of success are primarily desired for programming issues and types of services needed rather than what types of skills and competencies the client needs to have to receive services. The review of the literature, outlined below, will reflect this changing philosophical approach to service delivery.

As mentioned above, the nature of psychiatric services has changed. Studies completed in the 60’s and 70’s were dealing primarily with a population that was relatively new to the community due to deinstitutionalization. Additionally, psychotropic medications were, by today’s standards, primitive and less effective. The focus of research was on community success and eliminating or decreasing hospitalization, with an occasional focus on employment. During the 80’s as treatments progressed and mental health consumers found stability in the community, the focus of psychosocial rehabilitation turned toward the types of services to be successful. As professionals found greater stability in treatment, medication, and services during the 90’s, employment as an outcome became a greater focus for professionals and consumers.
A review of the literature reporting on predictors of success for persons with a mental illness indicate that there is quite variability in most of the findings. Much research was completed decades ago regarding psychiatric symptomatology and work performance. The majority of older studies have found that psychiatric symptomatology does not predict future work performance (Ciardiello, Klein, & Solkowski, 1988; Gurel & Lorei, 1972; Schwartz, Myers, & Astrachan; Strauss & Carpenter, 1972, 1974; Wilson, Berry, & Miskimins, 1969). However, some studies have found a relationship between psychiatric symptomatology and vocational outcomes. For example, Coryell and colleagues have reported in several studies that psychotic symptoms are associated with a decrease in being employed (Coryell, Lavori, Endicot, Keller, & VanEerdewegh, 1984; Coryell & Tsuang, 1985; Coryell, Keller, Lavori, & Endicott, 1990, Tsuang & Coryell, 1993). A few researchers have found a relationship between symptoms of schizophrenia and schizo-affective disorder that interfered with an individual’s ability to work (Bell & Lysaker, 1995; Gaebel & Peitzeker, 1987).

Related to psychiatric symptomatology is diagnosis category. It can be expected that since there is not a consistent relationship between psychiatric symptoms and employment then there would not be a consistent relationship between diagnosis and employment. Multiple studies have reported that diagnosis does not predict future vocational performance (Distefano & Pryer, 1970; Douzinas & Carpenter, 1981; Ethridge, 1968; Goss & Pate, 1967; Sturm & Lipton, 1967; Watts & Bennett, 1977).

There have only been a few studies suggesting a correlation between diagnosis and employment. Olshansky, Grob, and Ekdahl (1960) reported that when they followed-up on consumers more individuals with a diagnosis of neuroticism were employed
compared to individuals diagnosed as psychotic. Another study about a decade later also reported that when the researchers followed-up there were more individuals with a diagnosis of neuroticism employed compared to a diagnosis of psychotic (Wilson, Berry, Miskimins, 1969). However, other researchers used the same diagnosis criteria of neuroticism and psychotic and reported no relationship to employment (Sturm & Lipton, 1967; Watts & Bennett, 1977).

One may assume from the aforementioned studies that an individual’s diagnosis and symptomatology are not correlated with functional skills. Considering the date of most of these studies, the effectiveness of treatment in ameliorating or decreasing symptoms would beg to be studied. Several researchers compared the positive success of hospitalization and drug treatment decreasing mental health symptoms but not positively affecting vocational skills (Anthony, Cohen, & Vitalo, 1978; Englehardt & Rosen, 1976). The evidence suggests that knowing an individual’s symptoms is not indicative of how well one can perform vocationally. However, more recently, Rogers and colleagues (1991) reported that one of three statistically significant differences between an employed and unemployed group during follow-up was that those individuals with the most severe symptoms at beginning and end point were in the unemployed group.

An individual’s ability to function in one environment does not predict how an individual will function in another environment. Perhaps the most striking evidence regarding employment comes from studies that found no relationship between work activity in the hospital and subsequent employment in the community (Lorei & Gurel, 1973; Walker & McCourt, 1969). Walker and McCourt (1969) found that there was very little difference in the percentage of individuals employed after discharge between those
who engaged in work activity during hospitalization (26%) and those who did not participate in work related activities during hospitalization (20%).

Summers (1981) reported that individuals receiving aftercare post hospitalization over a one year period showed significant improvement in social functioning and symptomatology but vocational functioning had no improvement. Another study that had a large sample size indicated that there were very low correlations between social activity and basic living skills with paid employment (Tessler & Manderscheid, 1982). The evidence suggests that vocational functioning cannot be determined by how well an individual prepares or adjusts to community living.

The research does not just focus on what does not predict future work performance. There have been several factors that repeatedly predict future work performance: ratings of work adjustment skills, social skills, and prior work history. Early research focused on work readiness skills developed in sheltered workshops. Most of these studies occurred decades ago since the topic correlated with the prevailing philosophy of intervention at the time. Most studies, if not all, that specifically tested a relationship between work adjustment skills and future employment found a significant correlation (Cheadle, Cushing, Drew, & Morgan, 1967; Cheadle & Morgan, 1972; Distefano & Pryer, 1970; Rogers, Anthony, Toole, & Brown, 1991; Rogers, Anthony, Cohen, Davies, 1997; Watts, 1978). However, the manner in which the data were analyzed prohibited the researchers from determining which specific work adjustment skills are good predictors of success for competitive employment (Anthony, 1994).

Anthony, Howell, and Danley (1982) organized work adjustment skills into three categories: getting along, doing the job, and being dependable. The results of their study
indicate that getting along with peers and supervisors and being dependable predict future success at employment more than an individual’s ability to complete specific qualitative and quantitative tasks of a job. More recent studies have continued to report the same findings (Anthony, Rogers, Cohen, & Davies, 1995; Bolton, Bellini, & Brookings, 2000).

There does appear to be one somewhat consistent predictor of success for future employment in the literature, and that is past work history. For three decades, the literature has been somewhat consistent in that the best demographic variable to predict future work performance is past work history. A few of the earlier studies were completed by Anthony and Buell (1973 & 1974). They were trying to determine which, if any, demographic characteristics predicted post hospital employment and looked at ten different demographic variables. The ten demographic variables accounted for a total of 53% variance with previous work history contributing the majority of variance. These researchers replicated their study one year later and reported the same results (Buell & Anthony, 1974). They followed the same procedures in the 1973 study and used consumers released from the same hospital. Again, fifty-three percentage of the variance was accounted for by the demographic variables with previous employment accounting for the greatest variance.

A decade later Anthony and Jansen (1984) identified eleven other studies dated in the 60’s and 70’s that found the same relationship between prior work history and future vocational performance. Tsang and colleagues (2000) completed a literature review from 1985 to 1997 and identified seven additional studies supporting that prior work history predicts future employment and three studies that did not corroborate prior work history as a predictor of future work performance.
Despite the data indicating previous work history as a predictor of future vocational performance, there has been one fairly large scale study that found no relationship between previous work history and future vocational performance. Rogers and colleagues (1991) followed 275 consumers that received services post psychiatric hospitalization from three different psychosocial programs located in three different states. The employed group and the unemployed group did not differ on previous work history. Rogers and colleagues reexamined their data (1997) with different questions of predictions and still reported that work history was not statistically different for the employed group or the unemployed group.

Rogers and colleagues (1997) perhaps found something similar to work history predicting future work performance. Their data revealed that work skills as measured by the Griffiths Work Behavior Scale were statistically significant for the employed group compared to the unemployed group. However, no mention was made to see if these work skills correlated to prior work history. Their conclusion was that prior work history may lose its predictive ability in future work performance with individuals that are vocationally goal oriented.

As mentioned earlier, in the 1990’s studies started turning toward services received and their predictive power in future work performance. In the aforementioned Rogers and colleagues study (1991), when they found little to no differences in the employed group and the unemployed group they turned to analyzing the services received to determine any differences in employment outcome. They discovered that the employed group averaged more hours per month in vocational services. Granted there is no cause
and effect attributed to this data but the natural tendency to seek any predictive power in
services received is of importance.

In the early 1990’s, Bond (1992) and McGurrin (1994) completed overviews of
the effectiveness of programs in vocational rehabilitation for persons with a mental
illness. These researchers both posit that although there is much evidence in support of
the existing programs (including those highlighted above), there still needs to be more
empirical research on the exact types of services that assist individuals in gaining
competitive employment. Based on the review that this author has outlined above, a
challenge exists in complying with this request, especially, if providers interpret how to
implement established programs. The authors of the outlined programs (ACT, SE) have
established protocols and procedures for following their models but if budget restraints
constrict the implementation of the model then any empirical testing of the effectiveness
of the model is also flawed and perhaps as not as significant to the current body of
literature.

Predictors of Success with State-Federal V R System

The state-federal VR system tends to be more amenable to empirical review of the
effectiveness of the program. The system is defined by federal regulations so each state
follows the same process. The system is defined in terms of ‘statuses’ and ‘services
received.’ Each status and service received is described and defined and available for
each counselor that works with consumers to facilitate consistent and uniform use from
state to state and counselor to counselor. The services are individualized to each
consumer’s need. The type and quality of services received may vary from state to state
and county to county. However, the system lends itself to an empirical review of the effectiveness of the services received.

Two studies have attempted to review the services received by consumers in the VR system that have been closed successfully in order to determine any potential causal relationships of beneficial services. However, both studies did not differentiate disability type. Eber (1966) was perhaps one of the very first to review this data. He looked at a fairly large sample (N=502) of consumers from the Alabama VR system in an attempt to predict employment at closure. He included a large set of variables in his hypothesis that he organized into four variable sets that reflected characteristics of the consumer at time of referral, patterns of service use, counselor data, and socioeconomic context in which services were provided. Eber discovered that the variables that contributed the greatest to the prediction of vocational outcome were: total cost of service, provision of restorative services, consumer gender and race, and education level at referral.

Barrett and colleagues (1978) investigated a small sample of consumers (N=170) that received VR services from five states (California, Minnesota, Pennsylvania, Rhode Island, and Texas). They organized variables into three variable sets: consumer characteristics at referral, VR process variables, and counselor data to predict competitive employment. They concluded that consumer characteristics (work status at referral) accounted for the greatest share of variance while VR process variables (number of services and receiving vocational training, restoration, and placement services) accounted for a moderate share of the variance in predicting competitive employment.

Finch and Wheaton (1999) analyzed patterns of services for state-federal VR consumers with a mental illness to determine any predictive value to employment
outcome. Their focus was on identifying any pattern of services received correlating with specific occupations and wages. The researchers identified five clusters of service patterns and found a moderate relationship between cluster membership and occupation. The counseling-only cluster had the highest number of consumers employed in professional, technical, and management occupations. Likewise, in looking at cluster membership and wages, consumers in the counseling-only cluster made higher wages than those that did not.

Bolton, Bellini, and Brookings (2000) investigated a large sample (N=4,603) consumers that received VR services from Arkansas. They organized the variables into four sets: personal history, functional capacities and limitations as measured by the Functional Inventory Assessment (FAI), rehabilitation services, and employment outcome. Additionally, consumers were organized into five major disability categories: orthopedic, chronic medical, psychiatric, mental retardation and developmental disability (MR), and learning disability (LD).

There were several findings from the data pertinent to the consumers in the psychiatric group. Individuals in the psychiatric group had more functional limitations in the area of adaptive behavior, longer time in rehabilitation, lower service costs, and a smaller portion competitively employed. Overall, job placement made the single greatest contribution to the prediction of competitive employment across all disability types.

These studies are the beginning in highlighting what we know about how service use for consumers in the VR system correlate with an outcome of competitive employment. However, they also indicate how much more we have to learn about how
service use can help shed some light on what helps to predict competitive employment. They provide guidance in how to organize service delivery and areas of future research.

**Predictors of Success for Persons with a Mental Illness in Rural Areas**

Much has been written about vocational rehabilitation in rural areas. However, most of the literature that exists outlines the status and the needs of consumers and providers. Typical comments about the status of rural rehabilitation include lack of transportation, jobs, access to services and providers, and attitudinal barriers (Lowry, 1980; Harley, Rice, & Dean, 1996; Harley, Bishop, & Wilson, 2002; Jones & Brand, 1995). Leland and Schneider (1982) investigated persons with disabilities residing in rural areas and reported three major conclusions. First, progress in rural rehabilitation has been little to nonexistent since 1969. Second, persons with disabilities residing in rural areas need services. Finally, the primary barrier to implementing effective rehabilitation services in rural areas is lack of concrete data about persons with disabilities residing in rural areas. A decade later, McFarlane and Griswold (1992) reported similar concerns to those of Leland and Schneider. They posit that professionals have failed to investigate the social, economic, and employment impact on service delivery and consumer utilization of services in rural rehabilitation.

Needless to say, a paucity of empirical literature exists on the predictors of success for consumers in psychosocial rehabilitation residing in rural areas. Dottl and Greenley (1997) used a cross sectional design to study rural and urban consumers of case management services during 1989 and 1990 in eighteen different counties in Wisconsin. Each consumer had a diagnosis of a severe mental illness (N=1600). The two groups
were measured on psychiatric status and functioning level. The researchers found that rural consumers were less likely to have a diagnosis of schizophrenia or organic brain syndrome; have higher levels of general pathology such as, more belligerent, bizarre, nervous, and depressed; and, engage in fewer vocational activities that rural consumers.

An early study investigated whether persons residing in rural areas receiving Aid to Families with Dependent Children (AFDC) could benefit from traditional rehabilitation services. Recipients (N=123) received work evaluation, work adjustment, vocational training, and vocational placement; in addition to, childcare and budgeting classes. Cook (1976) reported that fifty four percent (54%) of the recipients ended with being employed and off of AFDC. Additionally, Cook reported that demographic characteristics such as marital status, race, number of dependents, and time on AFDC, education, and intelligence did not predict who would be successful at employment and off of AFDC.

Lam and colleagues (1987) investigated employment patterns and vocational and psychosocial service needs of individuals residing in rural areas in Wisconsin (N= 138) after receiving services from the state-federal VR system. They reported that forty percent (40%) of the sample were competitively employed, the average salary was just slightly higher than minimum wage, and the majority (73%) was satisfied with their job. Unemployed participants indicated that their main barriers to employment were external factors such as job availability and lack of transportation. Vocational and psychosocial needs identified by both employed and unemployed groups were: return to school, finding a better job, returning to rehabilitation agency, meeting people, and better housing. Unfortunately, there were no distinctions made by type of disability.
One recent study found some interesting results in urban versus rural differences in vocational outcome for consumers receiving services from the state-federal VR system who had a diagnosis of traumatic brain injury (TBI). Johnstone and colleagues (2003) did not find any statistically significant differences between the two populations in level of education, age, or gender. However, the urban sample population had a higher percentage of African Americans than the rural areas. Additionally, the researchers did not find any statistically significant differences between the two groups in terms of level of severity of head injury or neuropsychological ability. However, individuals in the rural sample reported experiencing more multiple TBI’s than individuals from urban areas. Overall, the results indicated minimal differences in terms of disability between both groups. TBI appears to affect individuals similarly regardless of place of residence. However, a different pattern emerges when looking at services received and outcome. Surprisingly, maintenance, transportation, and on-the-job training were provided disproportionately more frequently to individuals in urban areas rather than rural areas. Additionally, the average cost per case was higher in the urban areas rather than the rural areas. Twenty-four percent (24%) of the individuals from urban areas were closed successfully versus only seven percent (7%) of the individuals from rural areas. Perhaps more startling is the fact that seventy-nine percent (79%) of the rural individuals discontinued services after qualifying versus only fifty-two percent (52%) of individuals from urban areas. Granted, both numbers are high but it appears that individuals from rural areas experience much less success in vocational rehabilitation services.
Transitional Employment/Clubhouses

Only one study was found that included individuals that reside in rural areas and the focus of the article was to describe the characteristics of clubhouses in urban and rural areas. The authors surveyed forty-eight clubhouses (29 rural and 19 urban) in the state of Virginia. Their ultimate intent was to improve the capacity of community programs for outcome evaluation. The authors report that rural clubhouses are open fewer evenings and weekends, do not have public transportation, have less with a waiting list, significantly fewer had a vocational specialist, were significantly smaller, provided less structured activities but more leisure activities, and served a more homogeneous population (Blank, Jodl, & McCall, 1996).

Assertive Community Treatment (ACT) Teams

Santos et al. (1993) implemented an ACT program for consumers with a severe mental illness in a rural area in South Carolina and evaluated the effectiveness of the program. The sample consisted of the first twenty-three consumers who participated in the ACT program between 1989 and 1991. Hospital days and duration for the group were reduced by at least seventy-five percent (75%). The researchers were able to demonstrate the effectiveness of the program with consumers but also highlighted that independent living and work are were less emphasized due to limited alternative for housing and employment.

Fekete et al. (1998) used an experimental design to investigate the effectiveness of ACT compared to traditional case management services for persons with a severe mental illness in four rural communities in Indiana over a two-year period. Overall, the magnitude of change was generally small. There were no significant differences in
number of hospitalizations and duration of hospitalizations between both groups.
Additionally, there were no between group differences in employment. There were only
two identified differences between sites: the rural group received less frequent visits but
they reported greater satisfaction of services than the control group in urban areas. The
results of the study in general support the existing research reported above for studies
completed in urban areas. ACT appears to have a substantial impact on decreasing
hospitalization admissions and duration yet have minimal, if any, effect on quality of life,
housing, and employment.

The State-Federal VR System

The earliest laws established to assist persons with disabilities originated as a
direct result of wars. The first national law enacted to provide benefits for persons with
disabilities resulted from the Revolutionary War. In 1776, a pension law was established
to veterans injured in the war that precluded employment after the war. The benefits were
thought to be an expression of gratitude for service to negate poverty rather than a social
recognition that veterans with disabilities needed treatment.

The second national disability specific legislation was the Act for the Relief of
Sick and Disabled Seamen that congress passed in 1798 (Wright, 1980). The Maritime
Hospital Service was created which later became the United States Public Health Service.
After the civil war, congress passed the General Law (12 Stat. L., 566) in 1862 which
provided for the rehabilitation of war injured veterans (Wright, 1980).

Concurrent with the early wars in America was the Industrial Revolution.
However, the emergence of increased manufacturing brought new (or more) problems.
Large numbers of workers were now developing disabilities as a result of harsh working
conditions or injuries from machinery. The health of workers was left up to the private companies. As blatant abuses or neglect occurred, most workers had no recourse for treatment or financial remuneration for injuries and disabilities except to rely on a judicial system wrought with loopholes for the employer (Wright, 1980), as legislators were hesitant of protective laws for fear of driving industry to other states (Rubin & Roessler, 2001). Charitable organizations, such as Goodwill Industries, began providing some general support for those in need.

Eventually, the plight of the employees spread to the sympathetic ears of then president, Theodore Roosevelt, who led the way for regulation. The first Worker’s Compensation state law was passed in New York in 1910 (Rubin & Roessler, 2001). The program was initiated to assume social responsibility for injured workers, initially, it was never meant to address vocational rehabilitation.

The American Red Cross became the pioneer of vocational rehabilitation. They provided retraining programs for veterans with disabilities. However, they soon realized that continuation would not be economically feasible and the federal government entered to continue the development. Prior to World War I, amendments to the War Risk Insurance Act of 1914, supported vocational rehabilitation training for persons with disabilities in the federal service (Wright, 1980, p. 128). The National Defense Act of 1916 provided vocational training to soldiers with disabilities while still in service to increase their ability to compete for jobs when they returned to civilian life (Wright, 1980).

All of these mandates led to the conclusion that persons with disabilities could be rehabilitated by receiving training. The Smith-Hughes Act of 1917 (P.L. 64-347)
provided vocational education and established the Federal Board of Vocational Education. One year later, the Smith-Sears Act (P.L. 65-178) of 1918 established vocational rehabilitation for veterans of WW I.

The vocational rehabilitation system as we know it today was established in 1920 with the passage of the Smith-Fess Act (P.L. 66-236), also known as the Vocational Rehabilitation Act. This legislation was important as it was the first the federal government had instituted that committed itself to the rehabilitation of persons with disabilities for the general public, as it provided federal grants to states matched with state dollars. Hence, the birth of the federal-state vocational rehabilitation system.

As the Smith-Fess Act took hold, disability was defined as a physical defect or infirmity and the services accepted for federal dollars were vocational counseling, training, occupational adjustment, placement services, and prosthesis for training purposes only (Wright, 1980). By 1922, a total of thirty-five states had agreed to participate. At the time of the passage of the Smith-Fess Act, legislators were uncertain as to the political effects so they considered the bill to be a trial basis. As a result, the law needed to be extended periodically. The first extension was in 1924, the second in 1930, and the final extension in 1933. In 1933 the state programs were placed under vocational education resulting in more emphasis on education and training and less support for physical restoration and related services (Wright, 1980).

When President Roosevelt took office in 1932 he campaigned on a platform of government support for the plight of its citizens due to economic hardships of the depression. In 1935, vocational rehabilitation became permanent, as well as double monetary authorization, by an inclusion of a Title in the Social Security Act (Wrights,
1980). The act mandated permanent authorization for annual vocational rehabilitation grants to states. The initial definition of disability covered by the Social Security Act of 1935 did not include persons with mental illness on the grounds that they were being cared for by public hospitals and institutions and it was too difficult to diagnose (Wright, 1980).

The following year in 1936, special preference for services to persons with visual impairments was enacted with the Randolph-Sheppard Act. States were authorized to provide license to operate vending machines in federal buildings for persons with visual impairments. This was the first piece of legislation that focused on preferential employment to persons with disabilities. Two years later the Wagner-O’Day Act of 1938 mandated federal government to purchase products made from workshops that employed persons with visual impairments (Rubin & Roessler, 2001). As a result, more individuals with blindness were employed.

World War II facilitated the expansion of the rehabilitation movement. Progress had been made in extending the scope of the state-federal rehabilitation system and in extending the population of persons with disabilities to be served. Rehabilitation had reached an impasse and to progress further, broader definitions of function and responsibility were necessary (Wright, 1980). As America prepared for the military and industrial needs of WW II, legislators became aware that the needs of the public were expanding. A labor shortage ensued as a result of increased industrial needs and an increase in persons with disabilities from civilian and military life living longer as advances in medicine were made. The focus for the first time needed to be on abilities versus disabilities.
The Barden-LaFollette Act of 1943 (P.L. 78-113) addressed the emerging needs. This act superceded previous federal laws and broadened the vocational rehabilitation program. Monetarily, there were no longer limits on what the government could authorize for vocational rehabilitation. Additionally, for the first time, eligibility was extended to include persons with mental illness and mental retardation. This progress was continued with the Vocational Rehabilitation Act Amendments of 1954 (P.L. 83-565) which mandated building rehabilitation facilities so that custodial care for persons with mental illness and mental retardation was becoming a thing of the past.

The Vocational Rehabilitation Act was amended again in 1965 (P.L. 89-333). The main benefit to persons with mental illness and mental retardation is that the amendment extended services to persons with severe disabilities by extending the evaluation period up to eighteen months. It was mandated that that each state had to provide VR services to any persons with a disability by July 1, 1975. Then the Rehabilitation Act of 1973 (P.L. 93-112) set the precedent for rehabilitation as we know it today (Rubin & Roessler, 2001). The two major themes of this law was client involvement in the rehabilitation process and that priority is given to persons with the most severe disabilities. Legislation post 1973 continues to highlight these two priorities.

Throughout the development of the rehabilitation legislation there was always dissention regarding the need for federal support versus the states need to take responsibility. It may be assumed that the reason legislation was always enacted to promote vocational rehabilitation was because it worked. There is a thirteen to one (13/1) return rate for dollars spent on VR services (Rubin & Roessler, 2001, p. 238). Statistics
reported each year by RSA indicate that the state-federal VR system works with an increasing number of consumers with increasing success rates and increasing hourly pay rates.

Lately, the state-federal VR system has come under some fairly heavy criticism about not meeting the needs of individuals with mental illness. The National Alliance for the Mentally Ill (NAMI) published an executive summary in 1997 outlining seven (7) reasons why they think the federal-state VR system is ineffective in working with persons who have a severe mental illness. The seven reasons why they feel the federal-state VR system has failed persons with a mental include: time limited services; reward system for VR counselors who place greatest effort and resources with those individuals easier to place; place a large portion of resources into administration and disability eligibility and determination; administrators and counselors lack knowledge about mental illness; the codes used to describe mental illnesses are outdated; poor job at cooperatively working with mental health providers; and time and duration limited funding for community based providers serve as a disincentive resulting in lack of providers/services (Noble, Honsberg, Hall, & Flynn, 1997). However, NAMI proposed eliminating the federal-state VR system and utilizing the federal dollars to replicate and multiply appropriate programs of ACT, SE, and TE in all states.

Needless to say, the NAMI proposal initiated discussion among professionals, researchers, and consumers to rethink policy and future practice directions aimed at increasing employment and quality of life for persons with a severe mental illness. Fortunately, several researchers focused on critical reviews of ACT and SE to outline how these programs correlate with NAMI’s recommendation. As previously reviewed
above, Bond and colleagues (1999) highlighted the evidence of SE’s effectiveness as a psychiatric rehabilitation approach for competitive employment for persons with a severe mental illness. Additionally, Herdelin and Scott (1999) applied meta-analysis to nineteen (19) experimental studies of the effectiveness of ACT. Based on their findings, they are uncertain about large claims of efficacy in ACT programs because the literature consists of modest size of treatment effects. Their results are congruent with the previous findings addressed above. There is great variability in implementation and measurement of the ACT program so we need more replication studies with larger sample sizes and cost analysis before changing any policy of funding decisions.

Conley (1999) highlights several important points about the ability of the state-federal VR system to close persons with a severe mental illness successfully (status 26) as he assessed the conclusions drawn by the NAMI report. First of all, Conley (1999) points out that despite the fact that services are time-limited; the VR program has some legal abilities to provide longer term services. Specifically, every Individualized Employment Plan (IEP) addresses the consumer’s need of post-employment services or extended services. Additionally, a separate supported employment program has been created that can provide long-term support, including TE, and previously stipulated time limit of eighteen months has been eliminated. Finally, vocational rehabilitation counselors may always re-open a case for former consumers if they require additional services to maintain their job or find other employment.

Conley (1999) addresses the barrier of counselor incentives on working with consumers who require the least amount of services by explaining that some states deemphasize only evaluating their counselors on how many successful closures they get
per year. Certainly all states need to document how many successful closures their
 counselors obtain as a way of tracking quality and quantity of services in order to
 recognize their strengths and areas of improvement as an agency. Additionally, what is
 not mentioned by the NAMI report or Conley (1999) is that many vocational
 rehabilitation counselors carry a large caseload that permits them to assist consumers
 with greater needs while still working with those consumers with less needs so they are
 not concerned with ‘quick closures’ only.

 Conley (1999) addresses the criticism from NAMI regarding the state-federal VR
 system from working effectively with mental health centers very matter of fact, in that,
 these criticisms overlap with the mental health centers and providers. Many consumers
 with a severe mental illness tend to be served by dual agencies so other agencies,
 primarily mental health centers, need to share the responsibility for the effectiveness of
 assisting persons with severe mental illness become employed.

 Summary

 A paucity of research is known about the delivery of VR services for consumers
 residing in rural areas. The evolution of service delivery for persons with a mental illness
 has been continually focused on improving competitive rates of employment; however,
 little is known about the actual service delivery and how the service delivery equates to
 outcomes of successful competitive employment in the rural areas. Much is known in the
 urban areas. But do the same processes, procedures, and services work in both areas
 equally well with equal success rates? This study aims to explore the differences in the
 VR experience between consumers residing in urban and rural counties in the state of
 Ohio who have received services through ORSC during fiscal year 2002.
CHAPTER 3

METHODOLOGY

The purpose of this study is to identify characteristics of success for persons with a primary diagnosis of a mental health disorder who were successfully employed through the federal-state vocational rehabilitation (VR) program in urban and rural areas for FY 2002 in the state of Ohio. Additionally, this study will investigate any differences in total case expenditure, hourly rate, weekly hours worked, and level of education at case closure. There are demographic disparities between the rural and urban population and this study will seek to examine if VR services assist in reducing the demographic disparities. Knowledge about the services provided that facilitate successful employment within the VR system will help legislatures and organizations prepare for the 21st century so that expenditures may be focused on what is most needed.

The research questions to be answered by this study are:

Question 1: Is there a difference in the number of services received by persons with a primary diagnosis of a mental health disorder residing in urban versus rural areas whose cases have been rehabilitated (Status 26) in the state of Ohio?
Question 2: Is there a difference in the characteristics of success (Status 26) for persons with a primary diagnosis of a mental health disorder in urban and rural counties in the state of Ohio?

Question 3: Are there any differences in total case expenditure, weekly hours worked, hourly rate of pay, and level of education at close of case, between consumers successfully rehabilitated (status 26) with a primary diagnosis of a mental health disorder who reside in urban and rural areas.

Question 4: Is there a difference in types of services received by individuals residing in urban and rural areas whose cases have been closed successfully (Status 26) in the state of Ohio?

Research Design

A correlational design will be employed since the information about the variables will be obtained from an existing “natural setting.” The natural setting is the federal-state vocational rehabilitation program in Ohio, the Ohio Rehabilitation Services Commission (ORSC). The state of Ohio collects the data yearly for the Rehabilitation Services Administration (RSA). This study will measure the characteristics of success in services provided and whether certain services may serve as predictors of employment for persons living in urban or rural areas, specifically, determining if there is a difference in characteristics of success for services provided between the two groups. Correlational designs are appropriate when a researcher is attempting to determine to what degree the independent variable can predict the criterion (Fraenkel & Wallen, 1995, p. 289).

Typically, correlational research is utilized when looking for and describing relationships that may exist among naturally occurring phenomena, without any attempt
at altering the phenomena. Since the variables in question are unable to be manipulated, an appropriate non-experimental correlational design will be used. This research will not determine any causal relationship.

Secondary Data Source

This study will use secondary data from consumers who have a primary diagnosis of a mental health disorder who have received vocational rehabilitation services from Rehabilitation Services Administration through Ohio Rehabilitation Services Commission during the year 2002 and who were successfully employed for 90 days or more. The original data for consumers were collected on the Ohio Rehabilitation Services Statistical Recording Form (RSC-911).

The advantage of utilizing secondary analysis is that the process requires a researcher to focus on the theoretical foundation of their study versus the practical and methodological problems of collecting new data (Baker, 1994). Social science researchers often prefer this method. Obviously, the process requires the researcher to be fully aware of the body of literature on the topic of interest.

Baker (1994) highlights the importance of the researcher paying attention to the issue of validity in using the data for a different purpose. The first task is to review the quality of the data gathering organization. Then the researcher needs to review the purpose of the original research and determine the extent to which the dataset contains variables (indicators) which will allow for answers to the research questions in the new study. Using an existing natural occurring setting enhances the extent the study may be generalized to and replicated by similar groups.
Internal validity is defined as the degree to which observed differences on the dependent variable are directly related to the independent variable, not some other variable (Fraenkel & Wallen, p.551). If the hypothesized relationships are supported in this study, the evidence for internal validity increases.

The Agency

The Ohio Rehabilitation Services Commission (ORSC) provides VR services through Rehabilitation Services Administration (RSA). VR services for the public originated in 1920 with the passage of the Smith-Fess Act (PL 66-236) (Wright, 1980, p. 135). Several subsequent re-authorizations of the Act were passed after 1920. The Barden-Lafollette Act of 1943 saw a major change of accepting persons with mental illness as eligible for VR services for the first time. Multiple re-authorizations have been passed since 1943, extending funding for services and identifying target populations and goals.

RSA, the federal rehabilitation agency administers the program mandates of legislation signed into law. As such, RSA sets forth federal regulations by which the state rehabilitation agencies must conform. RSA serves about 600,000 consumers each year. ORSC serves about 48,000 consumers each year.

Eligibility criteria to receive VR services are that: (1) the potential consumer has a physical and/or mental disability; (2) the disability results in a substantial impediment or handicap to employment; and (3) the potential consumer can benefit from vocational rehabilitation services in preparing for, entering in or retaining gainful employment (RSA 2002, ORSC 2002). One of the major goals of VR is to overcome barriers that hinder
getting a job and keeping a job for persons with disabilities. An implicit goal is that employment for persons with disabilities will lead to an increased quality of life.

Participants

The participants in this study will be individuals who received vocational rehabilitation services through the state-federal VR program in the state of Ohio, the Ohio Rehabilitation Services Commission (ORSC) in the year 2002. Each participant had an Individualized Employment Plan (IEP) with ORSC. Participants will be obtained through examination of 2002 client data through the RSA-911 reporting system. All subjects will be classified as having a mental illness and closed successfully in status 26. No information will be provided that will allow any consumer to be identified. ORSC strips the RSA-911 reporting form of any identifying information. Specific information about participants such as diagnosis and demographic characteristics will be included upon review of data.

The participant’s ages range from 16 to 65 and there is not a significant difference in numbers of female versus male participants (gender will not be measured). RSA has three categories of mental illness, for the purposes of this study; there will be no delineation between participants with one, two, or three mental health diagnoses. This study will not delineate between those with a co-morbid physical disorder and those with only a mental health disorder. Each participant will be selected for the study if they have a code of at least one of three psychiatric diagnoses for their primary diagnosis. Based on the researchers experience and knowledge, participants involved in the program are
referred from a variety of sources. Sources may include: self, parents, physicians, psychiatrists, mental health clinicians, or mental health case managers. Services provided are supposed to be tailored to meet individual needs.

Determining sampling method and sampling size are major points for researchers based on research questions and resources available. The result must ultimately be dictated by which sampling method and what sample size is most appropriate for the research questions. The population consisted of 999 consumers with a primary diagnosis of a mental health disorder that resided in an urban county and 183 consumers with a primary diagnosis of a mental health disorder that resided in a rural county. The sample consisted of 366 consumers: 183 consumers residing in a rural county from the population and 183 consumers residing in an urban county were randomly selected from the 999 cases in the population through random selection in SPSS. The sample selection was based on several factors. First, logistic regression was part of the data analysis for this data. Logistic regression requires at least 50 cases in the sample for each variable and the equation for this research included three (3) variables requiring a total of 150 cases. So the decision was made to keep all of the rural cases and match the number with randomly selected cases from urban counties. Additionally, the sample size selection included the consideration that a MANOVA analysis would also be completed. A review of the data indicated that the dependent variables did not meet the assumption of equality of variance matrices. A violation of this assumption is minimal if the groups are approximately equal size (Hair et al., 1995).

This study utilized G Power to complete the power analysis for an equal balance between Type I and Type II errors.
The Database

The Rehabilitation Services Administration has been collecting data since 1986. Larisgoista (1997) summarized important information about the RSA database:

Its use has been mandatory in reporting program evaluation information to the Rehabilitation Services Administration (RSA) of the federal government. Every state is required to collect this information on all VR clients. The CSR 911 is amended on an as needed or as requested basis and general statistics are made available from RSA on a nationwide basis under the Freedom of Information Act. The available data is statistical in nature and does not include any personal identifying information (p.91).

The 911 national database is available for public use; however, during the process of converting state data to a national database, the zip codes are stripped from state data prohibiting the study of urban and rural differences nationally. The 911 data for the state of Ohio was chosen due to the fairly even mix of urban and rural counties in the state of Ohio. The researcher submitted a proposal to ORSC to obtain the data requesting the inclusion of zip codes to separate urban and rural participants.

The Policy Statement from RSA-PD-95-04 outlines that data will be collected by RSA through individual consumer Case Service Report. The Office of Management and Budget (OMB) approves the collection of this data. The goal is to collect data of high quality and integrity.
Data Collection

Data for this study will be obtained from secondary source documents. Information recorded by vocational rehabilitation counselors utilizes Policy Directive, RSA-PS-95-04. This policy serves as a manual and outlines the instructions, the meaning of each section, edit specifications, and data quality cross checks.

Data Collection Instrument

Data for this study was obtained from secondary source documents. Although the documents contained extensive demographic information, the researcher will select only the variables of interest for this study. Rehabilitation counselors record the information according to federal guidelines established by RSA. The federal policy applicable to this study is RSA-PS-95-04.

The instrument used to collect data is first generated off of RSA-0001 coding form, included in every case collected through the Ohio Rehabilitation Services Commission. The RSC-0001 form records personal data at the time of acceptance, a record of the services provided, record of movement through the vocational rehabilitation process, and status at closure. Once a case is closed, the information on this form is transferred onto a Case Service Report (CSR). There are 150 data elements; however, this study will use only the following:

- Primary Disabling Condition (#18)
- County of residence (#2)
- Working status at referral (#41)
- Status at Closure (#33)
- Education: at referral (#40) at closure (#60)
- Total case expenditure/cost (#38)
- Hourly wage at closure (status 26) (#62)
- Work hours per week at closure (status 26) (#63)
Type of Services:
Diagnostic/Assessment (#68)
Restoration (#69)
College Training (#70)
Business/Vocational School (#71)
On-the-job training (#73)
Miscellaneous training (#74)
Substantial counseling (#75)
Job referral services (#76)
Job placement services (#77)
Transportation (#78)
Income maintenance (#79)
Other Services (#86)

Rehabilitation Services Administration has established federal guidelines for coding and documenting the RSA-911. At the time of data entry, 18 comparison checks are utilized to promote consistency, coherence, and utility of RSA-911 data elements, and the validity of measurements derived from these data. There is an unknown element of miscoding or lack of coding that exists with collection and analysis of this type of archival data.

**Data Errors**

It is recognized that some information may be entered into the database incorrectly; thereby creating the possibility of unknown errors. Likewise, some counselors may rely on their memory to code certain information, which may also create unknown errors (Wheaton, Finch, Wilson, & Haag Granello, 1997). However, these errors are assumed to be random.
Missing Data

Based on personal conversations with rehabilitation counselor’s in the state of Ohio during the data collecting fiscal year 2002, there were no additions or deletions in the data reported. The researcher assumes that the lack of missing data is aided by not having major changes in the data gathering process.

The researcher completed a visual review of the data indicating that the only missing data exists with the omission of a zip code for three cases. However, the city is documented for all three of these cases. The researcher reviewed the zip code possibilities for the three cities documented to determine if all zip codes for the city listed clearly falls into either a rural or urban category. In all three cases the county was easy to identify because all three cities were major metropolitan areas.

There was no missing data for the independent variables and dependent variables.

Procedure

This section will outline the steps taken to analyze the data for those that may subsequently want to duplicate the study. This section will provide information about the rationale for operationalizing the variables and the categories selected. Specific information will also be included in describing the variables used in the analyses.

The data was given to the researcher on a compact disc from ORSC and imported into the Statistical Package for Social Sciences #13(SPSS). SPSS has the capacity to calculate both descriptive and inferential statistics.
The Variables

Justification of Variables

The data contained over 150 variables. Not all of the variables were relevant to the study under investigation. Reducing the variables is important to the researcher so that the resulting model is more meaningful and easily generalized. The variables selected were chosen because they typically exist in all state BVR system data. In addition, other agencies providing vocational rehabilitation services to persons with a mental health disorder tend to provide some of the same services involved in this study.

The researcher focused the study on the services provided to consumers because the existing body of literature documents the paucity of providers and resources available to the rural population compared to the urban areas. Part of the role ORSC has in the delivery of vocational rehabilitation services is to help identify the service needs of the consumers they serve. ORSC evaluates their data and monitors service providers to ensure quality of service to their consumers. Obviously, understanding the services that may predict successful employment (status 26) is helpful information to ORSC as they guide rehabilitation providers and agencies to meet the needs of their communities.

This researcher also considered the body of literature and what variables have been found to be significant in previous studies attempting to determine predictors of success for persons with a mental health disorder. Multiple studies analyzing demographic characteristics have reported that previous work experience has been a consistent predictor of successful employment (Anthony, Cohen, & Farkas, 1990; Anthony & Jansen, 1984; Arns & Linney, 1995; Mueser, Salyers, & Mueser, 2001). However, a few studies have found that previous work experience has no impact on successful

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employment (Rogers, et al., 1991; Rogers, et al., 1997). Rogers and colleagues (1997) have posited that perhaps it is not previous work experience per se, but rather a history of work that affords consumers some transferable skills for success. Other demographic variables have produced inconsistent results in predicting successful employment such as age, symptoms, and diagnosis.

Very little attention has been given to the influence of services received and successful employment (status 26) for persons with a primary diagnosis of a mental health disorder. Finch (1997) explored the patterns of vocational rehabilitation services for consumers with mental health disorders receiving VR services through ORSC. Finch discovered that substantial counseling was a predictor of successful employment.

The professional experience of the researcher was another factor involved in selecting variables for this study. This researcher has 13 years of experience in working with persons with a mental health disorder and two years assisting persons with a mental health disorder in finding employment. Part of this researcher’s experience involved working with consumers in an urban setting and in a rural setting. This researcher noted differences between the two groups and was unsuccessful in finding empirical data to help guide service delivery in a rural setting.

Given that work experience is the most consistent predictor of success for persons with a mental health disorder obtaining competitive employment and the VR services has not been studied with the rural population with a mental health disorder the independent variables chosen for research question 2 in this study include the twelve services recorded for FY 2002, work status at referral, and educational level at referral. The twelve services include: diagnostic and assessment, restoration, college or university training, business or
vocational training, on-the-job training, miscellaneous training, counseling, job referral, job placement, transportation, and maintenance services. The choice of services as independent variables is limited by the services as identified by RSA. The demographic characteristics of mental health diagnosis and residing in an urban or rural setting are other independent variables in this study.

**Independent Variables**

**Primary Disabling Condition.** This variable is coded to represent the individual’s diagnoses at the time of acceptance. There are three codes for mental illness: one is 500, Psychotic Disorders (includes Schizophrenia, Bi-Polar Disorders, Delusional and Psychotic Disorders), a second is 505, Neurotic Disorders (includes Anxiety Disorders, Phobia Disorders, Obsessive-Compulsive Disorders, Personality Disorders) and the third is 510, Depression (Mood Disorders). There will be no distinction between these three disorders. These categories are archaic terms and not used predominately in the mental health field so discovering any differences between the categories, as currently labeled, are not feasible. Any consumer who has one of the aforementioned disorders as a primary disabling condition will be included in the population.

**Residence.** This is a categorical variable with two levels: urban area or rural area. Often when researchers are discussing “rural” America, they are typically referring to conditions in non-metropolitan areas (Jordan & Hargrove, 1987). Metropolitan and non-metropolitan areas are defined on a basis of counties. For this research, the definition utilized by the Economic Research Service with the United States Department of Agriculture (2000) will be applied to the Ohio data:
“**Metropolitan counties** areas contain core counties with one or more central cities of at least 50,000 residents or with a Census Bureau defined urbanized area (a total metro area population of 100,000 or more) and fringe counties that are economically tied to the core counties.

**Nonmetropolitan counties** are outside the boundaries of metro areas and all have no cities with as many as 50,000 residents.”

According to the Ohio Department of Development, Office of Strategic Research (2000), Ohio has 41 metropolitan counties and 47 nonmetropolitan counties.

The county of residence of participants is recorded 1-88 representing the Ohio counties alphabetized A through W, on line five of the RSA Case Service Form. Based on county of residence, participants will be recorded dichotomously as residing in urban or rural areas in Ohio. Refer to Table 3.1 and 3.2 for specific county delineation.

<table>
<thead>
<tr>
<th>Metropolitan (Urban) Counties on the state of Ohio</th>
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<td>0 = Metropolitan (Urban) Counties</td>
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Table 3.1: Metropolitan (Urban) counties in Ohio.
Table 3.2: Nonmetropolitan (rural) counties in Ohio

1 = Nonmetropolitan (rural) Counties
Adams, Ashland, Athens, Champaign, Clinton, Coshocton, Darke, Defiance, Erie, Fayette, Galia, Guernsey, Hancock, Hardin, Harrison, Henry, Highland, Hocking, Holmes, Huron, Jackson, Knox, Logan, Marion, Meigs, Mercer, Monroe, Morgan, Morrow, Muskingum, Noble, Ottawa, Paulding, Perry, Pike, Preble, Putnam, Ross, Sandusky, Scioto, Seneca, Shelby, Tuscarawas, Union, Van Wert, Vinton, Wayne, Williams, Wyandot

Work status at time of application. Work status is defined as the work activity performed one week prior to the application for VR services. This question seeks to ascertain if the work activity occurred during the week prior to application and does not consider the level of such activity. Work status is a multichotomous variable with nine levels: (1) competitive, (2) sheltered workshop, (3) self-employed, (4) state agency managed business enterprise, (5) homemaker, (6) unpaid family worker, (7) not working
student, (8) not working – other, and (9) not working trainee or worker in non-competitive employment.

According to the directive from RSC, any of the first six codes count as “work.” If individuals fall into two categories then the directive instructs the work activity to be coded in the most descriptive code used. Descriptions for the levels of this variable include:

**Competitive Employment** refers to employment for wages, salary, commissions, tips, or piece-rates but does not include work in sheltered employment.

**Sheltered Workshop** refers to employment for wages or salary in a setting conducted by a nonprofit organization for persons with disabilities unable to enter into or not ready for competitive employment.

**Self-employment** refers to employment for profit or fees in one’s own business, farm, shop, or office.

**State Agency Managed Business Enterprise** refers to employment with vending stands and other small businesses by persons with severe disabilities under the management supervision of a State agency (includes home industry, farming, and other enterprises).

**Homemaker** refers to men and women whose activity is keeping house for their families and themselves, if they live alone.

**Unpaid Family Worker** refers to persons who work without pay on a family farm or in a family business.

**Not Working Student** refers to persons who were or are attending school the week before application.
Not Working Other refers to persons not otherwise classified in the previous categories and not a trainee as defined below, such as persons just out of school who have been unable to get jobs; persons unable to retain or obtain work; homemakers unable to perform their duties; persons residing in institutions; persons receiving only in-kind support (meals, lodging, etc.); and persons who have performed unpaid volunteer work.

Not Working Trainee refers to persons who may have received stipends during the week before application but were functioning in a non-competitive environment. Typically refers to persons who were participating in work training or work adjustment.

For the purposes of this study, the variable will be coded dichotomously. Levels 1-6 of this variable will be considered competitively employed and coded with a 0 and levels 7-9 will be coded as not employed with a 1. See Table 3.3 below.

According to the directive, any of the first six codes count as “work” for purposes of vocational rehabilitation. Definitions used in the database are listed above. For purposes of this research, the variable work status at time of referral will be recoded dichotomously to reflect whether the individual was competitively employed or not at time of referral. This is a more useful distinction for persons with a mental illness enrolled in a vocational rehabilitation process. Typically, persons with a mental illness not ready for competitive employment get involved in more sheltered programs before entering a VR program. Refer to Table 3.4 below.
### Work Status at Referral Categories

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Competitive Employment</td>
</tr>
<tr>
<td>2</td>
<td>Extended employment (workshops)</td>
</tr>
<tr>
<td>3</td>
<td>Self-employed (except BEP)</td>
</tr>
<tr>
<td>4</td>
<td>State-agency-managed business enterprise (BEP)</td>
</tr>
<tr>
<td>5</td>
<td>Homemaker</td>
</tr>
<tr>
<td>6</td>
<td>Unpaid family worker</td>
</tr>
<tr>
<td>7</td>
<td>Not working: Student</td>
</tr>
</tbody>
</table>

Table 3.3: Work Status at Referral Categories

### Competitive Employment

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Individual not employed competitively RSA 911 categories 2,4,5,6,7</td>
</tr>
<tr>
<td>1</td>
<td>Individual competitively employed RSA 911 categories 1 &amp; 3</td>
</tr>
</tbody>
</table>

Table 3.4: Work Status at Time of Referral
The rest of the variables pertain to potential services provided. There are a total of 12 services an individual may receive to become employed.

1) Diagnostic/Assessment – this category includes any assessments that verify or diagnose a primary disabling condition, and career assessment instruments.

2) Restoration – includes any treatment or services needed for an individual to return to a previous level of functioning.

3) College/University Training – includes any classes or degrees that are obtained for seeking employment.

4) Business/Vocational Training – includes any classes or course of study that is obtained for seeking employment.

5) On-the-job Training – includes any services received in preparing for, and learning a job while performing the job on site with trainers.

6) Miscellaneous Training – includes training not mentioned in previous categories but that is required to prepare for or learn job skills.

7) Substantial Counseling – includes counseling received by the VR counselor that exceeds the standard and norm for the VR process. Does not include counseling received from external sources to the VR agency.

8) Job Finding Services – includes services and training with assistance geared toward applying and interviewing for jobs.
9) Job Placement – includes services and training with assistance geared toward developing relationships with potential employers in an individual’s skill area; may also include resume writing and interviewing.

10) Transportation – includes any services or support that an individual may need in getting to and from work or training for work.

11) Maintenance – includes services or support that an individual may need during a training period or the first few weeks of employment.

12) Other Services – includes services not covered by other categories that an individual may need for training or work purposes.

Services provided is a categorical variable with two levels: yes, the service was provided, or no, the service was not provided. A zero (0) will represent that the service was not provided and a one (1) will represent that the service was provided.

Dependent Variables

Total case expenditure. Case expenditure, a metric variable, is recorded in the total dollar amount that was spent on all of the services that a consumer received for the time their case was opened until the case was closed successfully (status 26). The total case expenditure for the population ranges from $0 to $53,120.58.
**Hourly wages.** Hourly wages, a metric variable, is recorded as the dollar amount the consumer is making at the time the case is closed successfully (status 26). The hourly wages range from $5.00 to $43.25. In order to double check the data entered, any case that reports an hourly wage of $20.00 or more will have their Ohio Career Information System (OCIS) code verified through Occupational Outlook Handbook to ensure the wage reported matches the job reported. No discrepancies were found.

**Weekly hours worked.** Weekly hours worked, a metric variable, are recorded as the number of hours that a consumer is working at the time of the case is closed successfully (status 26). The hours worked range from 5 to 60 hours.

**Education at case closure (status 26).** Education is reported as the highest level of education completed at the time of application and at case closure. Education is a multichotomous variable with eight levels: (0) no formal education, (1) elementary education (grades 1-8), (2) Secondary education, no diploma (grades 9-12), (3) special education certificate of completion, (4) high school graduate or GED, (5) post secondary education, no degree, (6) associate or vocational technical degree, (7) bachelor’s degree, and (8) master’s degree or higher.

**Guide to Analysis**

This section will reflect the steps taken in data analysis in order to provide those researchers who may be considering replicating this study. Each step will be described in full detail to permit replication. The analysis will be completed in four parts. The four parts will consist of cross tabulation analysis, regressing the variables on county of residence under a Logistic Regression framework, and implementing a MANOVA design on the metric dependent variables (residence will be the only independent variable), and
highlighting the percentage of the sample receiving each of the twelve (12) services. Prior to beginning each of these steps the variables will be studied in detail.

**Univariate Testing**

Univariate analysis will be conducted to provide a foundation for understanding each particular variable. This process allowed a final cleaning of the data allowing each variable to be examined separately. First, frequency distributions (# of cases which fall into each of the categories of variables and the % total cases they represent) will be compiled. The distribution of the cases was also examined to determine which categories have the most and least cases, the number of urban versus rural cases.

**Cross Classification**

Cross classification tables was constructed. These tables assisted the researcher in sorting one variable in terms of the categories of the other variables and the relationship between the variables. Specifically, how contingent one variable is on another variable.

**Data Analysis**

Research Question 1

Is there a difference in the number of services received by persons with a primary diagnosis of a mental health disorder residing in urban versus rural areas whose cases have been rehabilitated (Status 26) in the state of Ohio?

**Variables**

The Explanatory variable is residence (categorical and dichotomous) and the criterion variable is number of services (metric variable ranging from 1-12).
### Table 3.5 Coding for Variables in Question 1

<table>
<thead>
<tr>
<th>Variables</th>
<th>Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explanatory Variable</strong></td>
<td></td>
</tr>
<tr>
<td>RESIDENCE</td>
<td>0 = urban</td>
</tr>
<tr>
<td></td>
<td>1 = rural</td>
</tr>
<tr>
<td><strong>Criterion Variables</strong></td>
<td></td>
</tr>
<tr>
<td>SERVICES</td>
<td></td>
</tr>
<tr>
<td>Diagnostic</td>
<td>0 = did not receive the service</td>
</tr>
<tr>
<td></td>
<td>1 = received the service</td>
</tr>
<tr>
<td>Restoration</td>
<td>0 = did not receive the service</td>
</tr>
<tr>
<td></td>
<td>1 = received the service</td>
</tr>
<tr>
<td>College/University Training</td>
<td>0 = did not receive the service</td>
</tr>
<tr>
<td></td>
<td>1 = received the service</td>
</tr>
<tr>
<td>Business/Vocational Training</td>
<td>0 = did not receive the service</td>
</tr>
<tr>
<td></td>
<td>1 = received the service</td>
</tr>
<tr>
<td>On-The-Job-Training</td>
<td>0 = did not receive the service</td>
</tr>
<tr>
<td></td>
<td>1 = received the service</td>
</tr>
<tr>
<td>Miscellaneous Training</td>
<td>0 = did not receive the service</td>
</tr>
<tr>
<td></td>
<td>1 = received the service</td>
</tr>
<tr>
<td>Counseling</td>
<td>0 = did not receive the service</td>
</tr>
<tr>
<td></td>
<td>1 = received the service</td>
</tr>
<tr>
<td>Job Referral</td>
<td>0 = did not receive the service</td>
</tr>
<tr>
<td></td>
<td>1 = received the service</td>
</tr>
<tr>
<td>Job Placement</td>
<td>0 = did not receive the service</td>
</tr>
<tr>
<td></td>
<td>1 = received the service</td>
</tr>
<tr>
<td>Transportation</td>
<td>0 = did not receive the service</td>
</tr>
<tr>
<td></td>
<td>1 = received the service</td>
</tr>
<tr>
<td>Maintenance</td>
<td>0 = did not receive the service</td>
</tr>
<tr>
<td></td>
<td>1 = received the service</td>
</tr>
<tr>
<td>Other Services</td>
<td>0 = did not receive the service</td>
</tr>
<tr>
<td></td>
<td>1 = received the service</td>
</tr>
</tbody>
</table>
Sample Test Statistic

The means between the number of services received for those residing in urban and rural areas will be examined. The t-test for independent means will be used to analyze whether there is a difference in the number of services received by individuals living in urban areas and rural areas. “The t-test is a parametric statistical test used to see whether a difference between the means of two samples is significant” (Fraenkel & Wallen, 1993, p. 199). Three assumptions associated with the t-test are (1) both groups are normally distributed in the population, (2) the variances of the observations are equal for both groups, and (3) independent random samples (Hopkins, Glass, & Hopkins, 1987, p. 160).

The point biserial correlation will be used to test the degree of association between those residing in urban and rural areas with a primary diagnosis of a mental health disorder. The point biserial correlation technique was developed to find the relationship between continuous interval or ratio variable and a dichotomous nominal variable (Ary, Lucy, & Razavieh, 1990, p. 157). The point biserial correlation coefficient ranges from -1.0 (perfect negative correlation) to +1.0 (perfect positive correlation).

Sampling Method

All individuals residing in urban and rural areas with a primary diagnosis of a mental health disorder whose cases were closed successfully (status 26).
Research Question 2

Is there a difference in the characteristics of success (Status 26) for persons with a primary diagnosis of a mental health disorder in urban and rural counties in the state of Ohio?

In order to clarify specifically what the data suggests about obtaining employment and because the dependent variable is a dichotomous categorical variable (residing in urban or rural county), multiple regression will not be used. Even though the object of the analysis is to predict one variable from another, the assumptions of multiple regression are not met. Specific assumptions for multiple regression are that all independent variables are interval, ratio, or dichotomous and the dependent variable is continuous, unbounded, and measured on an interval or ratio scale (Hair et al., 1995, p. 13). For multiple regression, the specification exists that all relevant predictors of the dependent variable are included in the analysis, no irrelevant predictors are included, and the form of the relationship is linear.

In contrast, Logistic regression can be used when linear regression assumptions are not met (Hair et al., 1995, p. 131). Therefore, Logistic regression will be used to respond to research question two. Logistic regression is a statistical method for analysis of the relationship between an observed proportion or rate, and a set of explanatory variables. The dependent variable is binary and creates other statistical options.

Log-linear modeling is also a useful method when categorical variables are involved. However, a standard log-linear model for a contingency table does not distinguish between response and explanatory variables, all variables are treated as response variables. Under the logistic model, the predicted value of the dependent
variable can be interpreted as the likelihood or the probability that an individual will act in a certain way (reside in a rural county). The predicted value is determined by the individual’s characteristics as they are given by the values of the explanatory independent variables. Finding the odds of employment given certain characteristics is valuable information for rehabilitation professionals and consumers.

The explanatory variables are level of education at referral (multichotomous variable with 5 levels: less than high school, high school graduate, some college, college degree, and post college), work experience at time of referral (dichotomous variable), and services provided (each service recorded as either receiving the service or not receiving the service).
<table>
<thead>
<tr>
<th>Variables</th>
<th>Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent Variable</strong></td>
<td></td>
</tr>
<tr>
<td>RESIDENCE</td>
<td>Urban = 0</td>
</tr>
<tr>
<td></td>
<td>Rural = 1</td>
</tr>
<tr>
<td><strong>Independent Variable</strong></td>
<td></td>
</tr>
<tr>
<td>WORK EXPERIENCE AT TIME OF REFERRAL</td>
<td>Yes = 0</td>
</tr>
<tr>
<td></td>
<td>No = 1</td>
</tr>
<tr>
<td>LEVEL OF EDUCATION</td>
<td>Less than HS = 0</td>
</tr>
<tr>
<td></td>
<td>HS Grad = 1</td>
</tr>
<tr>
<td></td>
<td>Some College = 2</td>
</tr>
<tr>
<td></td>
<td>College Grad = 3</td>
</tr>
<tr>
<td>SERVICES</td>
<td>Diagnostic 0 = did not receive the service</td>
</tr>
<tr>
<td></td>
<td>1 = received the service</td>
</tr>
<tr>
<td></td>
<td>Restoration 0 = did not receive the service</td>
</tr>
<tr>
<td></td>
<td>1 = received the service</td>
</tr>
<tr>
<td></td>
<td>College/University Training 0 = did not receive the service</td>
</tr>
<tr>
<td></td>
<td>1 = received the service</td>
</tr>
<tr>
<td></td>
<td>Business/Vocational Training 0 = did not receive the service</td>
</tr>
<tr>
<td></td>
<td>1 = received the service</td>
</tr>
<tr>
<td></td>
<td>On-The-Job-Training 0 = did not receive the service</td>
</tr>
<tr>
<td></td>
<td>1 = received the service</td>
</tr>
<tr>
<td></td>
<td>Miscellaneous Training 0 = did not receive the service</td>
</tr>
<tr>
<td></td>
<td>1 = received the service</td>
</tr>
<tr>
<td></td>
<td>Counseling 0 = did not receive the service</td>
</tr>
<tr>
<td></td>
<td>1 = received the service</td>
</tr>
<tr>
<td></td>
<td>Job Referral 0 = did not receive the service</td>
</tr>
<tr>
<td></td>
<td>1 = received the service</td>
</tr>
<tr>
<td></td>
<td>Job Placement 0 = did not receive the service</td>
</tr>
<tr>
<td></td>
<td>1 = received the service</td>
</tr>
<tr>
<td></td>
<td>Transportation 0 = did not receive the service</td>
</tr>
<tr>
<td></td>
<td>1 = received the service</td>
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<tr>
<td></td>
<td>Maintenance 0 = did not receive the service</td>
</tr>
<tr>
<td></td>
<td>1 = received the service</td>
</tr>
<tr>
<td></td>
<td>Other Services 0 = did not receive the service</td>
</tr>
<tr>
<td></td>
<td>1 = received the service</td>
</tr>
</tbody>
</table>

Table 3.6 Coding for Logistic Regression Analysis
Sample Test Statistic

Logistic regression will be used to investigate the likelihood of each explanatory variable to predict the dichotomous criterion variable, residing in a rural county.

Results will provide estimates of the probability of an event occurring (residing in a rural county) and will range from 0 to 1. These estimates if greater than .50 indicate the probability that the event will occur in the population (residing in a rural county). Likewise, a probability of less than .50 indicates that the event is unlikely to occur in the population (residing in an urban county). The regression coefficient ($b$) is interpreted as the logarithm “odds ratio” associated with a one unit change in the explanatory variable, but it is difficult to interpret. An odds ratio of 1.0 indicates there is no association between the two variables. Thus, the researcher will need to use the Exp ($B$). The higher the exponent score, the likelihood the event (residing in a rural county) will occur.

When $b$ (regression coefficient for the explanatory variables) is positive, the value of the Exp ($B$) is greater than 1 and the odds are increased that the event will occur. When $b$ is negative, the Exp ($B$) will be less than 1, indicating that the odds are decreased that the event will occur. Finally, when ($b$) is zero, the value of Exp ($B$) is 1, indicating that the odds are unchanged (SPSS, 2000).

Wald Statistic. The Wald test statistic is used to determine if the probability of an event occurring is significant (residing in a rural county). Additionally, the model chi-square test statistic is used to test the statistical null hypothesis ($H_0: b_{\text{residence}} = b_{\text{work experience at time of referral}} = b_{\text{services received}} = 0$) that the logistic regression coefficients for all the terms in the model, except the constant ($b_0$) are 0. Furthermore, the model chi-square is comparable to the overall $F$ test (Hair et al., 1995, p. 85). The $R$ (partial correlation)
will be examined to assess the relative contribution of the explanatory variables (b) in predicting whether the event will occur, for example, residing in a rural county (Hair et al., 1995, p.83). Note, that the $R$ is analogous to the $r$ statistic in multiple regression. Additionally, the $R$ value is a partial correlation between the explanatory variables and the criterion variable, that is, it describes the contribution (correlation) of each explanatory variable in the regression equation. Small values of $R$ indicate that the explanatory variable(s) has a small partial contribution to the regression model. A positive value of $R$ indicates that as the value of the explanatory variable increases, so does the likelihood of the event occurring. A negative value of $R$ indicates that as the value of the explanatory variable increases, there is a decrease in the likelihood of the event occurring (residing in a rural county).

**Goodness of Fit.** One way to tell how well the data fits the model is to use the goodness of fit utilizing a classification table and a histogram of observed versus predicted probabilities. The classification table displays the predicted and observed outcomes (residing in a rural county). The percentage of predicted and observed outcomes will be the baseline before entering any variables in the logistic regression equation. The histogram displays the observed group and estimated probabilities for each case. Thus, the goodness of fit will be examined by classification table and histogram of observed groups and predicted probabilities, in addition to the model chi-square. Key points that will be examined regarding the classification table and histogram are: (a) the percent of the correctly predicted classifications for the two groups and (b) the overall percent of correctly predicted classifications compared to the baseline predictions that all cases belong to the group where the event occurred or did not occur (Hair et al., 1995).
Procedures for Entering Explanatory Variables. The backward stepwise method of entry will be chosen in this question because of its utility in exploratory research. The backward stepwise procedure is designed to select from a group of explanatory variables at each step that makes the largest contribution to $R$ ($R$ in logistic regression is analogous to $r$ in multiple linear regression). The backward stepwise method of entry is most appropriately used when the research goal is primarily predictive or explanatory, the sample size is large, and the explanatory variables are not too large (Hair et al., 1995, p. 198). The regression coefficient ($B$) and the partial correlation coefficients ($R$) will be elaborated and displayed at each stepwise entry.

Research Question 3

Are there any differences in total case expenditure, weekly hours worked, hourly rate of pay, and level of education at close of case, between consumers successfully rehabilitated (status 26) with a primary diagnosis of a mental health disorder who reside in urban and rural areas.

Multivariate analysis of variance (MANOVA) will be used to examine to what extent differences in residence (urban and rural)(independent variable) exist in terms of the following dependent variables: total case expenditure, weekly hours worked, hourly rate of pay, and level of education at close of closure. A MANOVA is a statistical procedure used to assess differences between one or more categorical variable (residence) on more than one metric dependent variable (Hair et al. 1998, p. 110). In this case, indicator coding (treating residence as dummy variables) will be applied to enter the residence variable (i.e. 0 for urban and 1 for rural) so that these variables can act as
replacement variables (Hair et al., 1998, p.110). MANOVA controls for Type I error when using repeated measures (Hair et al, 1998, p. 261). MANOVA is more sensitive in detecting group differences even when there are relationships among dependent variables (Hair et al., 1998).

In order for MANOVA to be valid three assumptions must be met: independence of the observations, equality of variance-covariance matrices, and any linear combination of the dependent variables must follow a normal distribution (Hair et al., 1998, p. 275). According to Hair et al. (1998, p. 275) a lack of independence is the most serious violation, an example would be a time-ordered effect if measures are taken over time. It is expected that the data meets the assumption of independent observations since the data was collected on each consumer as the case and services were provided.

A violation of equality of variance-covariance matrices has minimal impact if the groups are of approximately equal size (Hair et al., 1998, p. 275). The groups will be considered equal if the largest group size divided by the smallest group size is less than 1.5 (Hair et al, 1998, p. 275) However, if the sizes of the groups differ greater than 1.5 then a test for unequal variances, the Box Test, will be used to provide significance levels for the test statistic (Hair et al, 1998, p. 275).

The last assumption for MANOVA is that of normality. Multivariate normality assumes that the joint effect of two variables is normally distributed (Hair et al., 1998, p. 276). Since there is no direct test for multivariate normality, univariate normality of each variable will be tested (Hair et al., 1998, p. 276).
Additional concern for this data would be linearity and multicollinearity. MANOVA requires a linear relationship between the dependent variables. As stated earlier, MANOVA is sensitive to relationships between the dependent variables; however, a high correlation among dependent variables indicates errors in the data analysis because the same cases are being measured (Hair et al., 1998, p. 276). A fairly low correlation among dependent variables, such as 0.3, would be preferable (Hair et al., 1998, 1997). In order to detect multicollinearity and examination of scatterplots, the residuals, the tolerance, and the variance inflation factor (VIF) will be performed. MANOVA is also extremely sensitive to outliers and they have a negative impact on Type I error. Hair et al. (1998, p. 276) recommends examining data for outliers and eliminating them from the analysis. One outlier was found in total case expenditure. The case cost $50,000 with the next closest case costing $30,000, so the case was thrown out.

**Test Statistic**

Wilkes’ lambda (also known as the $U$ statistic) will used to assess multivariate differences across groups. The advantage of using Wilkes’ lambda is that it considers all of the characteristic roots, which helps to determine whether groups are different without being concerned if the groups differ on at least one linear combination of the dependent variables (Hair, et al., 1998, p. 277). “The larger the between group dispersion, the smaller the value of Wilkes’ lambda and the greater the implied significance.” (Hair et al., 1998, p. 277).

Since the multivariate test of MANOVA only allows a researcher to reject the null hypothesis it does not pinpoint where the significant differences lie. Post-hoc analysis for significant results will be computed with an independent sample t-test. The t-test will
examine the two groups (urban and rural) regarding significant results on total case expenditure, weekly hours worked, hourly rate, and level of education at case closure. “The t-test is a parametric statistical test used to see whether a difference between the means of two samples is significant” (Fraenkel & Wallen, 1993, p. 199). Three assumptions associated with the t-test are (1) both groups are normally distributed in the population, (2) the variances of the observations are equal for both groups, and (3) independent random samples (Hopkins, Glass, & Hopkins, 1987, p. 160). However, conducting multiple t-tests increases the probability of a Type I error, Bonferroni adjustment will be used (Hair et al., 1998, p. 282). The Bonferroni adjustment was achieved by dividing the single test alpha by the number of tests to be performed (Hair et al., 1998, p.281).

Research Question 4:

Is there a difference in types of services received by individuals residing in urban and rural areas whose cases have been closed successfully (Status 26) in the state of Ohio?

Variables

Explanatory variable is residence (dichotomous) and the criterion variable is the 14 types of services (each a categorical and dichotomous variable). Descriptive statistics were used to elaborate the percentages of consumers who received each service based on county of residence.
CHAPTER 4

RESULTS

This chapter outlines and describes the results of the data analysis. The overall goal of the study was to determine any differences in the vocational rehabilitation experiences for persons with a primary diagnosis of a mental health disorder residing in urban and rural counties in the state of Ohio. A primary focus of exploring these differences was in the services received and the outcome of successful employment in terms of wages and weekly hours worked. The goal of the study was accomplished by examining the following research questions.

Research Questions

Question 1: Is there a difference in the number of services received by persons with a primary diagnosis of a mental health disorder residing in urban versus rural areas whose cases have been rehabilitated (Status 26) in the state of Ohio?

Question 2: Is there a difference in the characteristics of success (Status 26) for persons with a primary diagnosis of a mental health disorder in urban and rural counties in the state of Ohio?
Question 3: Are there any differences in total case expenditure, weekly hours worked, hourly rate of pay, and level of education at close of case, between consumers successfully rehabilitated (status 26) with a primary diagnosis of a mental health disorder who reside in urban and rural areas.

Question 4: Is there a difference in types of services received by individuals residing in urban and rural areas whose cases have been closed successfully (Status 26) in the state of Ohio?

Presentation of Results

This chapter is divided into two sections. The first section summarizes demographic information about the population and sample. The second section describes the results of each research question in sequence. The summary and interpretation of the major findings based on the analysis of the data is recorded in chapter 5.

Population Characteristics

In reporting the demographic variables, the information will first be given in the total population then the information will be separated for those residing in urban and rural counties. The total size of the population was 1,182 consumers with a primary diagnosis of a mental health disorder that were successfully rehabilitated (status 26) during the FY 2002. Of the total population 999 consumers resided in an urban county and 183 resided in a rural county.
Age

The ages ranged from 16-65 years, with a mean of 39.3 (SD = 10.81). The specific breakdown of ages in the population was as follows: 12% were 16 to 24 years, 20% were 25 to 34 years, 33% were 35 to 44 years, 28% were 45 to 54 years and 7% were 55 to 65 years of age. The specific breakdown of age in the urban and rural population was quite similar to that of the overall population.

<table>
<thead>
<tr>
<th>County</th>
<th>16-24 Years</th>
<th>25-34 Years</th>
<th>35-44 Years</th>
<th>45-54 Years</th>
<th>55-64 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>11.3%</td>
<td>20.0%</td>
<td>32.4%</td>
<td>28.6%</td>
<td>7.7%</td>
</tr>
<tr>
<td>Rural</td>
<td>17.5%</td>
<td>20.2%</td>
<td>33.3%</td>
<td>23.5%</td>
<td>5.5%</td>
</tr>
</tbody>
</table>

Table 4.1 Age of Population
Gender

The gender distribution was almost equal, 50.7% were female and 49.3% were male. The urban distribution of gender was very similar to the general population: 49.6% were female and 50.4% were male. There was only a slight variance in the rural population with a greater distribution of females at 56.3% versus 43.7% in the rural counties were male.

<table>
<thead>
<tr>
<th>County</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>49.7%</td>
<td>50.3%</td>
</tr>
<tr>
<td>Rural</td>
<td>56.3%</td>
<td>43.7%</td>
</tr>
</tbody>
</table>

Table 4.2  Gender of Population
Race

The population consisted of 78% Caucasian, 22% African American, and less than 1% American Indian or Asian. There was more variance of race in the urban population versus the rural population. The urban population consisted of 75% Caucasian, 22% African American, and less than 1% American Indian or Asian. However, the rural population consisted of 97% Caucasian and 3% African American.

<table>
<thead>
<tr>
<th>County</th>
<th>Caucasian</th>
<th>African American</th>
<th>American Indian</th>
<th>Asian</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>73.9%</td>
<td>25.2%</td>
<td>0.8%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Rural</td>
<td>97.3%</td>
<td>2.7%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

Table 4.3 Race of Population
Marital Status

Among the total population 18% were married, 1% was widowed, 21% was divorced, 5% was separated, and 54% never married. The findings were fairly similar for both urban and rural counties. The rural population has a higher percentage of those individuals that were married 22% compared to 16% for urban. Which then also correlates to a lower percentage of 50% having never been married compared to 55% for those in urban counties. The percentage of those that were widowed, divorced, or separated were more equal for those in rural and urban counties.

<table>
<thead>
<tr>
<th>County</th>
<th>Married</th>
<th>Widowed</th>
<th>Divorced</th>
<th>Separated</th>
<th>Never Married</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>16.7%</td>
<td>1.5%</td>
<td>21.5%</td>
<td>5.1%</td>
<td>55.2%</td>
</tr>
<tr>
<td>Rural</td>
<td>22.4%</td>
<td>0.0%</td>
<td>21.9%</td>
<td>4.9%</td>
<td>50.8%</td>
</tr>
</tbody>
</table>

Table 4.4 Marital Status of Population
Major Disability

The population had more consumers with a primary diagnosis of psychotic disorders at 44%, then 36% for those with a primary diagnosis of a neurotic disorder, and 20% with other mental/emotional/personality disorders. There was a greater degree of differences in the urban and rural populations. The urban population had a much greater percentage of the consumers with a diagnosis of psychotic disorders at 46% versus rural counties who only had 33% with a diagnosis of a psychotic disorder. However, rural counties had a greater percentage of consumers with a primary diagnosis of neurotic disorders at 46% compared to only 34% for those consumers in an urban county.

<table>
<thead>
<tr>
<th>County</th>
<th>Psychotic Disorders</th>
<th>Neurotic Disorders</th>
<th>Other Mental/Emotional/Personality Disorders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>45.6%</td>
<td>34.0%</td>
<td>20.4%</td>
</tr>
<tr>
<td>Rural</td>
<td>33.3%</td>
<td>46.4%</td>
<td>20.2%</td>
</tr>
</tbody>
</table>

Table 4.5 Disability of Population
Education

The rural population had less of a percentage of consumers with some college or a bachelor’s degree. Yet, the rural population has more of a percentage of consumers with secondary education, no diploma (9-12 grades), with a special education certificate, and with a high school degree or a GED. See Table. 4.6 on page 110.
<table>
<thead>
<tr>
<th>County</th>
<th>Elementary Education (Grades 1-8)</th>
<th>Secondary Education, No Diploma (Grades 9-12)</th>
<th>Special Education Certificate of Completion</th>
<th>High School Graduate or GED</th>
<th>Post Secondary Education, No Degree</th>
<th>Associate or Voc./Tech. Degree</th>
<th>Bachelor's Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>2.4%</td>
<td>14.0%</td>
<td>2.7%</td>
<td>45.0%</td>
<td>23.0%</td>
<td>0.4%</td>
<td>12.5%</td>
</tr>
<tr>
<td>Rural</td>
<td>2.8%</td>
<td>17.5%</td>
<td>6.0%</td>
<td>50.2%</td>
<td>18.0%</td>
<td>0.5%</td>
<td>5.0%</td>
</tr>
</tbody>
</table>

Table 4.6 Education of Population
Sample Characteristics

The next section describes the demographic variables for the sample used in this study. The information will highlight similarities between the sample and the population.

Age

The breakdown in age groups between the sample and the population was fairly consistent but there were some notable differences. Virtually no variance of percentages existed in the age ranges of those between 16 to 24, 25 to 34 years of age, and 35 to 44 years of age. However, there was a slight difference in the urban sample in the age ranges 45 to 54 and 55 to 65. The population consisted of 28% and 7% but the sample consisted of 24% and 12.5%. So the sample had a slightly higher percentage of older consumers than did the population.

<table>
<thead>
<tr>
<th>County</th>
<th>16-24 Years</th>
<th>25-34 Years</th>
<th>35-44 Years</th>
<th>45-54 Years</th>
<th>55-64 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>11.0%</td>
<td>20.7%</td>
<td>31.6%</td>
<td>24.0%</td>
<td>12.5%</td>
</tr>
<tr>
<td>Rural</td>
<td>17.4%</td>
<td>20.2%</td>
<td>33.0%</td>
<td>23.5%</td>
<td>5.5%</td>
</tr>
</tbody>
</table>

Table 4.7 Age of Sample
Gender

The urban sample had a slight variance in the percentage of males and females compared to the population. The distribution was almost completely even at 49.7% female and 50.3% male; however, the sample consisted of 45% female and 55% male.

<table>
<thead>
<tr>
<th>County</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>44.8%</td>
<td>55.2%</td>
</tr>
<tr>
<td>Rural</td>
<td>56.3%</td>
<td>43.7%</td>
</tr>
</tbody>
</table>

Table 4.8 Gender of Sample

Race

The sample reflected very similar race distributions as found in the population. There was just a slight increase in the percentage of those in the category of Caucasian and Asian: 76% compared to 74% in the population and 1.6 compared to .8 in the population. This increase was offset by a slight decrease in the percentage of those in the category of African American: 22% compared to 25% in the population.

<table>
<thead>
<tr>
<th>County</th>
<th>Caucasian</th>
<th>African American</th>
<th>American Indian</th>
<th>Asian</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>76.5%</td>
<td>21.3%</td>
<td>0.5%</td>
<td>1.6%</td>
</tr>
<tr>
<td>Rural</td>
<td>97.3%</td>
<td>2.7%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

Table 4.9 Race of Sample
Marital Status

There were small changes in percentages in the sample compared to the population for those residing in urban counties. There was a slight increase (.5 to 2%) in all categories except for those that were Never Married. The sample consisted of 51% that were Never Married compared to 54.4% in the population.

<table>
<thead>
<tr>
<th>County</th>
<th>Married</th>
<th>Widowed</th>
<th>Divorced</th>
<th>Separated</th>
<th>Never Married</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>17.5%</td>
<td>2.2%</td>
<td>23.0%</td>
<td>6.6%</td>
<td>50.8%</td>
</tr>
<tr>
<td>Rural</td>
<td>22.4%</td>
<td>0.0%</td>
<td>22.4%</td>
<td>4.9%</td>
<td>50.3%</td>
</tr>
</tbody>
</table>

Table 4.10 Marital Status of Sample
Major Disability

There was a slight variance in the percentage of categories of mental health disorders in the sample compared to the population. There was a very slight increase in those with a psychotic disorder: 44.2% compared to 45.6%. A slight decrease in those with a Neurotic disorder: 31.7% compared to 34% in the population. And a small increase in those diagnosed with other mental/emotional or personality disorder: 24% compared to 20.4%.

<table>
<thead>
<tr>
<th>County</th>
<th>Psychotic Disorders</th>
<th>Neurotic Disorders</th>
<th>Other Mental/Emotional/Personality Disorders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>45.4%</td>
<td>31.1%</td>
<td>23.5%</td>
</tr>
<tr>
<td>Rural</td>
<td>33.3%</td>
<td>46.4%</td>
<td>20.2%</td>
</tr>
</tbody>
</table>

Table 4.11 Major Disability of Sample
<table>
<thead>
<tr>
<th>County</th>
<th>Elementary Education (Grades 1-8)</th>
<th>Secondary Education, No Diploma (Grades 9-12)</th>
<th>Special Education Certificate of Completion</th>
<th>High School Graduate or GED</th>
<th>Post Secondary Education, No Degree</th>
<th>Associate or Voc./Tech. Degree</th>
<th>Bachelor's Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>5.5%</td>
<td>14.2%</td>
<td>0.2%</td>
<td>48.0%</td>
<td>20.2%</td>
<td>0.0%</td>
<td>11.0%</td>
</tr>
<tr>
<td>Rural</td>
<td>2.8%</td>
<td>17.5%</td>
<td>6.0%</td>
<td>50.2%</td>
<td>18.0%</td>
<td>0.5%</td>
<td>5.0%</td>
</tr>
</tbody>
</table>

Table 4.12 Education Level of Sample
Presentation of Results

Each section is outlined in the following sequence: (a) research question, (b) type of statistic used to analyze the data, (c) the type of statistic used to measure the relationship between the explanatory and criterion variables, and (d) the results of the analyses.

Question 1

Is there a difference in the number of services received by persons with a primary diagnosis of a mental health disorder residing in urban versus rural areas whose cases have been rehabilitated (Status 26) in the state of Ohio?

Table 4.13 presents the descriptive statistics for consumers residing in urban and rural counties with a primary diagnosis of a mental health disorder and the number of services (0-12) received by those whose cases were closed successfully (Status 26).

<table>
<thead>
<tr>
<th>N (Means and Standard Deviation) by County of Residence</th>
</tr>
</thead>
<tbody>
<tr>
<td>County</td>
</tr>
<tr>
<td>N</td>
</tr>
<tr>
<td>M</td>
</tr>
<tr>
<td>SD</td>
</tr>
</tbody>
</table>

Table 4.13 Means and Standard Deviations of Number of Services
The $t$-test was used to determine if the differences in mean number of services was statistically significant for the number of VR services received between those consumers residing in Urban and Rural counties in the State of Ohio. The point biserial correlation was used to measure the association between the explanatory and criterion variables. The Levene test results indicated that equal variances can be assumed. Thus, the pooled-variance $t$-test was used as the significance criterion. The $t$-test was not statistically significant as consumers residing in urban and rural counties received about the same mean number of services: $t (df = 364) = .622, p < .492$. The point biserial correlation is $r = -.036$, which indicated virtually no association between county of residence and the number of services received at successful closure (Status 26). The results are summarized in table 4.14 below.

<table>
<thead>
<tr>
<th>Total</th>
<th>$t$</th>
<th>df</th>
<th>Mean Diff.</th>
<th>Std. Error Diff.</th>
<th>Lower</th>
<th>Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.622</td>
<td>364</td>
<td>0.11475</td>
<td>0.18435</td>
<td>-0.24777</td>
<td>0.47728</td>
</tr>
</tbody>
</table>

Note: Equal Variance Assumed. $r = -0.036$; $p = <.492$

Table 4.14 T-Test of Average Number of Services by County of Residence
**Question 2**

Is there a difference in the characteristics of success (Status 26) for persons with a primary diagnosis of a mental health disorder in urban and rural counties in the state of Ohio?

The method used to examine the characteristics of success between consumers residing in urban and rural counties was logistic regression. The backward stepwise method of entry was selected because the research question is exploratory in nature. Stepwise procedures are defended when the research is predictive or exploratory in nature (Menard, 2002). The backward method needs to have a higher level of criteria before it takes a variable out of the model. Thus, the backward stepwise method of entry is preferred over the forward stepwise method of entry because the backward method has less risk of failing to find a relationship when one exists (Menard, 2002).

The statistical significance criteria (alpha) for inclusion was .05. The dependent variable was place of residence (0 = urban county and 1 = rural county). The independent variables were the twelve services offered by the VR system (assessment, restoration, college, on-the-job-training, counseling, job finding, placement, transportation, maintenance, and other), work status at referral (1 = employed, 0 = not employed), and education level at referral (less than high school, high school graduate, some college, associate business/technical degree, college graduate, and graduate degree). The level of education was recoded into new variables by using dummy coding using high school graduate as the reference variable.
Summary of Logistic Regression Results

The regression model that is identified through analysis provides information into how the independent variables as a group differ between consumers who reside in urban and rural counties. If the model is supported as a good fit for the data, one may conclude that the relationship found did not happen by chance and that the independent variables contribute to delineating the characteristics of the dependent variable. The regression model explored by the logistic regression analysis was: \( g(x) = b_1 \) (working at referral) + \( b_2 \) (level of education at referral, less than high school) + \( b_3 \) (level of education at referral, some college) + \( b_4 \) (level of education at referral, associates degree or business/vocational training) + \( b_5 \) (level of education at referral, college degree) + \( b_6 \) (level of education at referral, graduate degree) + \( b_7 \) (assessment services) + \( b_8 \) (restoration services) + \( b_9 \) (college training) + \( b_{10} \) (business/vocational training) + \( b_{11} \) (on-the-job training) + \( b_{12} \) (miscellaneous services) + \( b_{13} \) (counseling services) + \( b_{14} \) (job finding services) + \( b_{15} \) (job placement services) + \( b_{16} \) (transportation services) + \( b_{17} \) (maintenance services) + \( b_{18} \) (other services).

The regression model utilizing backward stepwise method of entry was \(.472 + - .757 \) (Working at time of referral) + \( -.845 \) (Business/Vocational school) + \( -.875 \) (Maintenance services) + \( -.995 \) (Education level at referral: College degree). The regression equation provides the additive relationship of all the variables as they pertain to the outcome variable. The regression equation addresses both the hypothesis and the research question. The regression equation provides information about each independent variable’s contribution to describing the differences between consumers residing in urban and rural counties in Ohio. Regression model statistics are reported in Table 4.15.
## Logistic Regression: Identifying Differences of VR Experience by County

<table>
<thead>
<tr>
<th>Variable</th>
<th>Parameter Estimates $\text{(b)}$</th>
<th>Standard Error (SE)</th>
<th>Wald</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working at Referral</td>
<td>-0.757</td>
<td>0.269</td>
<td>7.916</td>
<td>0.005</td>
</tr>
<tr>
<td>Business/Vocational Training</td>
<td>-0.845</td>
<td>0.294</td>
<td>8.236</td>
<td>0.004</td>
</tr>
<tr>
<td>Maintenance Services</td>
<td>-0.875</td>
<td>0.403</td>
<td>4.706</td>
<td>0.030</td>
</tr>
<tr>
<td>College Degree at Referral</td>
<td>-0.995</td>
<td>0.427</td>
<td>5.429</td>
<td>0.020</td>
</tr>
<tr>
<td>Constant</td>
<td>0.472</td>
<td>0.141</td>
<td>11.209</td>
<td>0.001</td>
</tr>
</tbody>
</table>

Model Chi-square = 28.890; df4, p = < .000

Table 4.15 Summary of Logistic Regression Coefficients

**Note.** To prevent failing to find a relationship when one exists, it is recommended that the usual .05 criterion for statistical significance be relaxed. It is recommended that the statistical significance criterion be set for a range from .15 to .20 (Mennard, 2002). For this study, the criterion for statistical significance remained at .05. If the aforementioned relaxed range was applied to this study’s data, no other variables would have been included in the regression model.
Parameter estimates measure the change in the logistic transformation of county of residence with a change in the independent variable. When the values are positive the odds are increased that the event will occur. If the value is negative the odds are decreased that the event will occur. As seen from Table 4.16 on page 123, the values for each of the explanatory variables are negative; therefore, the absence of the variable (0) is more likely to be associated with those in rural counties. Standard error represents the consistency of the parameter estimate. The smaller the standard error, the more consistent the estimate. The estimates for the logistic regression equation may be considered consistent; the range is from .141 to .403. The further the parameter estimates are from 0, the more the factor has an effect.

The Wald test statistic is used to determine if the probability of an event occurring is significant. The larger the Wald test statistic the greater the level of significance. The Wald test statistic for the regression model ranges from 4.706 to 11.209.

The model chi-square test statistic was used to test the statistical null hypothesis. The chi-square was 28.890 with 4 degrees of freedom and each value shows significance at the .05 level.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Odds Ratio Exp (B)</th>
<th>Lower</th>
<th>Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working at Referral</td>
<td>0.469</td>
<td>0.277</td>
<td>0.795</td>
</tr>
<tr>
<td>Business/Vocational Training</td>
<td>0.430</td>
<td>0.241</td>
<td>0.765</td>
</tr>
<tr>
<td>Maintenance Services</td>
<td>0.417</td>
<td>0.189</td>
<td>0.919</td>
</tr>
<tr>
<td>College Degree at Referral</td>
<td>0.370</td>
<td>0.160</td>
<td>0.854</td>
</tr>
<tr>
<td>Constant</td>
<td>1.604</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.16  Confidence Interval for Odds Ratio

Correlation Matrix

An assumption of logistic regression is that relevant variables are included in the equation and irrelevant variables are excluded from the equation. If independent variables are correlated with one another the standard error of the regression coefficients will be larger, resulting in confounding variables. The closer the correlation number is to -1 or +1, the stronger the relationship. The closer the value is to 0, the weaker the relationship. The correlation matrix for the regression equation is presented in Table 4.17 on page 123. The matrix highlights that there are no strong correlations between the independent variables in the regression model.
### Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>Constant</th>
<th>Working at Referral</th>
<th>Business/Voc. Training</th>
<th>Maintenance Services</th>
<th>Bachelor Degree at Referral</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>1.000</td>
<td>-0.433</td>
<td>-0.378</td>
<td>-0.179</td>
<td>-0.257</td>
</tr>
<tr>
<td>Working at Referral</td>
<td>-0.433</td>
<td>1.000</td>
<td>0.089</td>
<td>0.010</td>
<td>0.005</td>
</tr>
<tr>
<td>Business/Voc. Training</td>
<td>-0.378</td>
<td>0.089</td>
<td>1.000</td>
<td>-0.176</td>
<td>0.099</td>
</tr>
<tr>
<td>Maintenance Services</td>
<td>-0.179</td>
<td>0.100</td>
<td>-0.176</td>
<td>1.000</td>
<td>0.023</td>
</tr>
<tr>
<td>Bachelor Degree at Referral</td>
<td>-0.257</td>
<td>0.005</td>
<td>0.099</td>
<td>0.023</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Table 4.17 Correlation Matrix for Regression Model

**Goodness of Fit**

Once a model is determined it is important to measure consistency between the data and the model. A likelihood calculation or the probability of observing the particular data if the model is correct measures consistency. Goodness of fit is measured by the Goodness-of-fit statistic developed by Hosmer and Lemeshow, which is most useful to a sample (versus a population). The measure was 2.866 with 3 degrees of freedom and significance level of .413. The goodness-of-fit test, with p-values of .413 being greater
than 0.05, indicates that there is insufficient evidence to claim that the model does not fit the data adequately.

Hosmer and Lemeshow statistic produces an observed versus expected values to provide additional information. The baseline explanatory power based on percentages alone is 50%, because 50% of the sample resided in an urban county and 50% resided in a rural county. The percentage that can be predicted by guessing is only 50% because all are assumed to be rural or 1. The explanatory power of the logistic regression model is 60.1% for urban counties but 67.8% for rural counties, with a 63.9% overall power for the model. The model is better at predicting which consumer resides in a rural county than which consumer resides in an urban county. The model over classifies those that live in urban counties into a rural county.

**Question 3**

Are there any differences in total case expenditure, weekly hours worked, hourly rate of pay, and level of education at close of case between consumers successfully rehabilitated (status 26) with a primary diagnosis of a mental health disorder who reside in urban and rural counties in the state of Ohio?

Multivariate analysis of variance (MANOVA) was used to examine to what extent differences in residence (urban and rural)(independent variable) existed in terms of the following dependent variables: total case expenditure, weekly hours worked, hourly rate of pay, and level of education at case closure. MANOVA is a statistical procedure used to assess differences between one or more categorical variable (county of residence) on more than one metric dependent variable (Hair et al. 1998, p.110). County of
residence was treated as a dummy variable: 0 for urban and 1 for rural so these variables act as replacement variables (Hair et al., 1998, p.110). MANOVA is more sensitive in detecting group differences even when there are relationships among dependent variables (Hair et al., 1998).

Before analyzing the MANOVA, assumptions were investigated. First, the most important of the three assumptions (Hair et al., 1998), observations were considered independent. The data was obtained from the Ohio Rehabilitation Services Commission (ORSC) for fiscal year 2002 for consumers with a primary diagnosis of a mental health disorder that were successfully rehabilitated (status 26). The data consisted of documentation recorded about each consumer at the time they applied for VR services, documentation regarding the types of services received through the VR process, and the results of the successful employment. Thus, the data recorded is specific to each individual and not related to any other consumer’s response within the sample.

MANOVA makes the assumption that the within-group covariance matrices are equal. If the design is balanced so that there are an equal number of observations in each cell, the robustness of the MANOVA tests is guaranteed. Since the sample included 183 consumers in the urban counties and 183 consumers in the rural counties, the data meets this second assumption and the results of MANOVA may be interpreted.

The third assumption was that of normality. This final assumption requires that all variables be normally distributed. Since there is no direct test for multivariate normality each variable was tested for univariate normality. The results of each test for univariate normality are presented on the next 4 pages.
Figure 4.1 Total Case Expenditure
Figure 4.2 Hours Worked Per Week at Case Closure
Figure 4.3 Hourly Wage at Case Closure

Mean = $8.6667
Std. Dev. = $4.20676
N = 366
Figure 4.4 Level of Education at Case Closure

Mean = 4.46
Std. Dev. = 1.443
N = 362
The test for univariate normality indicates that, at best, the variables present with a half a normal distribution which does not meet the requirement of normality. However, as was noted in the assumption of equality of variance, the variables may be considered nonnormal. Specifically, hours worked per week and rate of hourly pay have legal minimums and limits which will limit the data to be distributed normally. Additionally, with larger sample sizes violations of this assumption have little impact (Hair et al., 1998). MANOVA is still valid for this research question.

MANOVA is extremely sensitive to outliers as they may have a negative impact on Type I error. Hair et al. (1998) recommends examining data for outliers and making a decision about eliminating them from the analysis. When the data was reviewed, one outlier was identified in the Total Case Expenditure. One case had over $50,000 spent, with the next nearest amount at less than $30,000. Since there was only one case, the case was eliminated from the analysis and it is expected that the results will not be affected by the elimination of one case.

Multicollinearity was examined by performing the tolerance and variance inflation factor (VIF), two of the most common measures for assessing pairwise and multiple variable collinearity (Hair et al., 1998). Table 4.18 shown on page 131, highlights the results of these two measures on the dependent variables.
Table 4.18 Tolerance and VIF Statistics for MANOVA Model.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education Level at Closure</td>
<td>0.961</td>
<td>1.040</td>
</tr>
<tr>
<td>Weekly Hours Worked</td>
<td>0.937</td>
<td>1.067</td>
</tr>
<tr>
<td>Total Case Expenditure</td>
<td>0.968</td>
<td>1.034</td>
</tr>
</tbody>
</table>

a. Predictors in the model: (Constant), Hourly Wage of Competitive Employment
b. Dependent Variable: Place of Residence (Urban or Rural)

The overall tolerance values among the dependent variables were higher than a common cutoff threshold (tolerance>0.10) and the VIF values among the dependent variables were lower than a common cutoff threshold (VIF<10) (Hair et al., 1998). These results indicate no collinearity between the dependent variables, thus, the assumption for noncollinearity has been met.

Results pertaining to model fit (Wilks’Lambda = .969, F(2.876, p = .023) indicated that the combined dependent variables may differ between consumers who reside in urban and rural counties. Results are presented in Table 4.19 on page 132.
Table 4.19 Types of Outcome Variables (MANOVA\(^b\))(N = 366)

The values for Wilks’ Lambda are both small (intercept = 0.075 and county = 0.969) with significance less than .05 (.000 and .023). Since the model identifies that there is a difference between the outcome variables by county of residence without pinpointing where the significant difference is, a post-hoc analysis for significant results was completed for all dependent variables with independent sample t-tests to determine specifically where the differences existed. The results are reported in Table 4.20 on page 133.
<table>
<thead>
<tr>
<th>Table 4.20  Post-hoc Analysis of Outcome Variable by County of Residence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Case Expenditure</strong></td>
</tr>
<tr>
<td><strong>N</strong>    <strong>Urban</strong>     <strong>Rural</strong>     <strong>Sig.</strong></td>
</tr>
<tr>
<td><strong>M</strong>    <strong>$6,053.96</strong>  <strong>$5,113.41</strong>  <strong>0.104</strong></td>
</tr>
<tr>
<td><strong>SD</strong>   <strong>$6,153.54</strong>  <strong>$4,816.98</strong>  <strong>0.104</strong></td>
</tr>
<tr>
<td><strong>Weekly Hours Worked</strong></td>
</tr>
<tr>
<td><strong>N</strong>    <strong>Urban</strong>     <strong>Rural</strong>     <strong>Sig.</strong></td>
</tr>
<tr>
<td><strong>M</strong>    <strong>31.31690</strong>   <strong>29.83610</strong>  <strong>0.160</strong></td>
</tr>
<tr>
<td><strong>SD</strong>   <strong>10.12434</strong>   <strong>9.97664</strong>   <strong>0.160</strong></td>
</tr>
<tr>
<td><strong>Hourly Wage</strong></td>
</tr>
<tr>
<td><strong>N</strong>    <strong>Urban</strong>     <strong>Rural</strong>     <strong>Sig.</strong></td>
</tr>
<tr>
<td><strong>M</strong>    <strong>$9.28</strong>      <strong>$4.82</strong>     <strong>0.005</strong> ****</td>
</tr>
<tr>
<td><strong>SD</strong>   <strong>$8.05</strong>      <strong>$3.38</strong>     <strong>0.005</strong> ****</td>
</tr>
<tr>
<td><strong>Education Level at Closure</strong></td>
</tr>
<tr>
<td><strong>N</strong>    <strong>Urban</strong>     <strong>Rural</strong>     <strong>Sig.</strong></td>
</tr>
<tr>
<td><strong>M</strong>    <strong>4.98330</strong>    <strong>4.38570</strong>   <strong>0.029</strong> *</td>
</tr>
<tr>
<td><strong>SD</strong>   <strong>4.23080</strong>    <strong>1.35497</strong>   <strong>0.029</strong> *</td>
</tr>
</tbody>
</table>

- a.  p < .05 (*Asterisk indicate statistically significant before Bonferroni adjustment
- ** Indicates statistically significant with Bonferroni adjustment (0.05/4 = p < .0125)
Conducting multiple t-tests increases the probability of a Type I error. As such, the Bonferroni inequality was measured to adjust the selected alpha level for overall Type I error rate. The Bonferroni involves computing the adjusted rate by the number of statistical tests that was performed and then using the adjusted rate as the critical value in each separate test \(0.05/4= p<.125\). By utilizing the Bonferroni adjustment there is a 5% chance of being wrong for all 4 statements versus 5% wrong for each statement without the Bonferroni adjustment. Since one of the variables was found to be statistically significant before the Bonferroni adjustment but not after the Bonferroni adjustment, a similar but more powerful procedure was also used to minimize Type I error. The Holm’s Step Down Multiple Testing procedure was used with all four dependent variables. The procedure requires that you start with the most significant test first, which is hourly wage, to adjust the selected alpha level. The procedure starts out with the same equation as Bonferroni: \(0.05/4 = 0.0125\), indicating hourly wage is statistically significant. The second step requires that the second most significant test, level of education at closure, to adjust the selected alpha level. The equation for step two is: \(0.05/3 = .016\), indicating that level of education remains not statistically significant.

The results indicate that the hourly wage variable accounts for the significance found in the MANOVA analysis. The mean for the urban group was $9.28 and the mean for the urban group was $4.82. The MANOVA model shows that there is a difference and the individual t-tests statistics show that the main effect lies in the hourly rate of pay.
Question 4

Is there a difference in types of services received by individuals residing in urban and rural counties with a primary diagnosis of a mental health disorder whose cases have been closed successfully (status 26) in the state of Ohio?

For the fiscal year 2002, there were 12 possible services that a consumer could receive. Each service is a dichotomous variable. The consumer either received the service or they did not receive the service. The percentage of those who received the service by county of residence is listed below in Table 4.22 on page 136.
<table>
<thead>
<tr>
<th>Services</th>
<th>Urban Received</th>
<th>Urban Not Received</th>
<th>Rural Received</th>
<th>Rural Not Received</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment</td>
<td>92.3</td>
<td>7.7</td>
<td>88.5</td>
<td>11.5</td>
</tr>
<tr>
<td>Restoration</td>
<td>24.0</td>
<td>76.0</td>
<td>25.7</td>
<td>74.3</td>
</tr>
<tr>
<td>College Training</td>
<td>13.7</td>
<td>86.3</td>
<td>14.8</td>
<td>85.2</td>
</tr>
<tr>
<td>Business or Technical Training</td>
<td>25.1</td>
<td>74.9</td>
<td>12.6</td>
<td>87.4</td>
</tr>
<tr>
<td>On the Job Training</td>
<td>8.2</td>
<td>91.8</td>
<td>7.1</td>
<td>92.9</td>
</tr>
<tr>
<td>Miscellaneous Training</td>
<td>27.3</td>
<td>72.7</td>
<td>32.2</td>
<td>67.8</td>
</tr>
<tr>
<td>Counseling</td>
<td>71.0</td>
<td>29.0</td>
<td>65.0</td>
<td>35.0</td>
</tr>
<tr>
<td>Job Finding</td>
<td>52.5</td>
<td>47.5</td>
<td>57.4</td>
<td>42.6</td>
</tr>
<tr>
<td>Placement</td>
<td>64.5</td>
<td>35.5</td>
<td>67.8</td>
<td>32.2</td>
</tr>
<tr>
<td>Transportation</td>
<td>29.5</td>
<td>70.5</td>
<td>28.4</td>
<td>71.6</td>
</tr>
<tr>
<td>Maintenance</td>
<td>14.2</td>
<td>85.8</td>
<td>5.5</td>
<td>94.5</td>
</tr>
<tr>
<td>Other</td>
<td>37.7</td>
<td>62.3</td>
<td>42.1</td>
<td>57.9</td>
</tr>
</tbody>
</table>

Table 4.21 Percentage of Consumers Receiving Services by County of Residence
CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Chapter five will contain the following two sections: 1) summary of the study and 2) recommendations for future research.

The overall purpose of this study was to explore for differences in the vocational rehabilitation experience of consumers with a primary diagnosis of a mental health disorder for those residing in urban and rural counties of Ohio. This study sought to focus on two general areas: 1) the services received and 2) differences in outcome variables. In order to gather information about the overall purpose and goals of this study the following research questions were investigated:

Question 1: Is there a difference in the number of services received by persons with a primary diagnosis of a mental health disorder residing in urban versus rural areas whose cases have been rehabilitated (Status 26) in the state of Ohio?

Question 2: Is there a difference in the characteristics of success (Status 26) for persons with a primary diagnosis of a mental health disorder in urban and rural counties in the state of Ohio?
Question 3: Are there any differences in total case expenditure, weekly hours worked, hourly rate of pay, and level of education at close of case, between consumers successfully rehabilitated (status 26) with a primary diagnosis of a mental health disorder who reside in urban and rural areas?

Question 4: Is there a difference in types of services received by individuals residing in urban and rural areas whose cases have been closed successfully (Status 26) in the state of Ohio?

The population consisted of 1,182 consumers with a primary diagnosis of a mental health disorder who were successfully rehabilitated (status 26) after receiving vocational rehabilitation services during the fiscal year 2002 with Ohio Rehabilitation Services Commission. There were 183 consumers in the population so 183 consumers in urban counties were randomly selected to achieve an equal number of urban and rural cases. The data collected in each state is sent to the Rehabilitation Services Administration (RSA) and collectively compiled on a yearly basis. However, any information identifying county of residence is stripped before the data goes to RSA. A special request was made to ORSC to obtain Ohio data that would include county of residence.

The research questions were derived by the absence of information in the literature. The research questions were tested using descriptive statistics, logistic regression, and multivariate analysis of variance (MANOVA).
Summary of the Study

Summary of research Question 1

The first question this study sought to discover was exploring if there were any differences in the number of services provided to consumers with a primary diagnosis of a mental health disorder who resided in urban and rural counties in Ohio.

The t-test and the point biserial were used to investigate the number of services and the association between the explanatory variable and the criterion variable. Consumers residing in Rural counties received an average of 4.47 services and consumers residing in Urban counties received an average of 4.59 services. Levene’s Test for equality of Variances resulted in a significance level of .343, which is not statistically significant; therefore, the null hypothesis was not rejected. The point biserial correlation ($r = 0.036$) does not indicate a relationship between county of residence and number of services received. ($p = .000$) for those consumers with a primary diagnosis of a mental health disorder who received VR services during the fiscal year 2002 in the state of Ohio.

At first glance, the finding of no differences may be interpreted as a positive finding. One may conclude that regardless of county of residence, each consumer will be provided with the necessary services to become successfully rehabilitated. However, not finding differences in number of services may also speak to the lack of assistance in the VR system to help ameliorate the more negative effects of rural life. Specifically, individuals that reside in rural areas tend to have less of an education, lower incomes, increased unemployment, more live in poverty, and more are without health insurance (RUPRI, 1999). Perhaps individuals residing in rural areas would benefit in receiving more services. Although speculative, these findings may imply that vocational
rehabilitation counselors may want to address the disparities for those residing in rural areas with a mental illness through the services they may provide as a consumer moves through the VR process.

Additionally, not finding any differences in number of services may be related to the quality of services provided in rural areas. However, it is important to note that this study cannot speak to the quality of services that were provided in either urban or rural counties. Since the lack of mental health providers and services are cited as a barrier to mental health treatment in rural areas (Coward, 1995; HFCA, 1998; Murray & Keller, 1991), one may expect that mental health centers may not be able to provide the amount or quality of services to their constituents, especially when the topic is centered on employment. This point may be highlighted by the paucity of studies in rural areas reporting vocational services typically offered through mental health centers such as Transitional Employment (TE) and Assertive Community Treatment teams (ACT). Particularly since this point is also highlighted by Santos and colleagues (1993) study that investigated the effectiveness of ACT in rural South Carolina. Albeit, the researchers reported effectiveness of ACT; however, there was not a focus on independent living or employment. So, perhaps the same programs exist with a different focus. A dependency may then exist for the consumer with a mental illness in rural areas to rely on VR services to help focus on employment. If indeed this dependency exists in the majority of areas, knowing that consumers receive equal amount of services is a good start towards program development.

The result of no differences in number of services may also speak to the nature of mental illness itself and less to location of residence. Perhaps given the cyclical nature of
mental illness, those with mental illness in general may tend to require similar services to address needs specific to the disability. Perhaps more research aimed at exploring current services available in different regions of the state and comparisons between those with a mental illness versus other disabilities may help provide more of an explanation about the quantity and quality of services that promote successful employment (Status 26) in the VR system. Since this study is exploratory in nature, the results may considered a baseline for future studies wanting to explore any differences in experiences

Summary of Research Question 2

The second question this study sought to explore was whether there was a difference in working at time of referral, level of education at time of referral, or types of services that were received through the VR process for consumers who were successfully rehabilitated (status 26) with a primary diagnosis of a mental health disorder. Logistic regression was used to explore question number two. The results of the logistic regression model confirm some of the disparities that have been reported about the demographic characteristics for those residing in rural areas. Specifically, since the parameter estimates for working at time of referral (-.757) and bachelor degree at time of referral (-.995) are both negative, the results indicate a higher probability that the rural population is not employed and does not have a bachelor’s degree at the time of referral.

The remaining two variables identified in the logistic regression model pertain to services provided through the VR process to become successfully employed. A consumer residing in a rural area is less likely to receive Business or Vocational Training (-.757). The service involves any class or program of study that is used to seek employment. Given the disparities between urban and rural life in terms of education and employment
one may hypothesize that individuals residing in rural areas may require or at least benefit from more, or the same amount, of Business or Vocational training as those residing in urban counties. The demographic information from the population and sample revealed that the population did not vary in the percentage of individuals residing in urban and rural counties who had a Business or Vocational training level of education at the time of referral. Clearly, the logistic regression model is helping to identify outcomes via services received to understand the VR experience between consumers in urban and rural areas.

It is important to note that services provided to consumers are individually based and the consumer has a choice in the types of services that they receive to reach their employment goal. At the same time, it is helpful to consider that regional and local availability of employment options may dictate the types of training needed to become employed in one’s community. Therefore, the differences in Business or Vocational training may be a product of lack of interest by consumers, lack of training options in communities, and/or the lack of employment opportunities that require Business or Vocational training. However, since this study did not include the availability of services in the state of Ohio no conclusions may be made as to the causality of the differences.

The second service that was received more by consumers residing in urban counties was Maintenance services (-.875). Maintenance services include services or supports that an individual may need during a training period or the first few weeks of employment. Common examples include childcare, lunches, work clothing, and parking. This service may make sense given that more consumers in urban counties received Business and Vocational training; however, the correlation matrix indicated that there
was a low correlation between Business and Vocational Training and Maintenance services (-.176). The closer the correlation number is to -1 or +1, the stronger the relationship. The closer the value is to 0, the weaker the relationship. So, it may not be assumed that the same consumers in the urban counties receiving Business or Vocational training are the same consumers receiving Maintenance services.

An explanation for rural consumers receiving less Maintenance services could be found in the collective characteristics of individuals residing in rural areas. Bird and his colleagues (1998) highlight that individuals with a mental illness approach their mental illness differently than those individuals residing in urban areas. Specifically, rural individuals rely more on primary care physicians to treat their mental illness, the stigma of mental illness is a greater barrier in seeking services, and community and/or family support and advocacy are virtually non-existent as in urban areas (Bird et al., 1998). Implicit in the rural culture is that individuals take more pride and insistence on taking care of their own needs. Thus, the consumers may not request assistance for Maintenance services.

Another possible factor for the differences in Maintenance services may be that vocational rehabilitation counselors providing services in rural areas also expect consumers in rural areas to provide more of their own support during the VR process. If the vocational rehabilitation counselors are from the rural areas, they too, may prescribe to the rural culture of self sufficiency that Bird and his colleagues (1998) posit. It is important to highlight that since there are many separate services included in Maintenance services it is difficult to ascertain by the data why so few individuals (5.5%) residing in rural areas received these kinds of support.
Summary of Research Question 3

The third research question investigated the differences between consumers residing in urban and rural areas in terms of total case expenditure, weekly hours worked, hourly rate of pay, and educational level at closure. Multivariate analysis of variance was used to examine this question. The values for the Wilks’ Lambda were both small (intercept = 0.075 and county = 0.969) with significance less than .05 (.000 and .023). Since the model identified a difference between the outcome variables by county of residence without pinpointing where the significant difference was, a post-hoc analysis was completed to determine significant results for all dependent variables with independent sample t-tests. Two of the four dependent variables were found to have a level of significance (0.05): hourly rate of pay (.005) and level of education at case closure (.029). However, once the Bonferroni inequality was measured to adjust the selected alpha level (0.05/4 = p<.0125) for overall Type I error rate, only one dependent variable remained with a significance level and that was hourly rate of pay.

The mean hourly wage for consumers residing in urban counties was $9.28 and the mean hourly wage for consumers residing in rural counties was $8.05. The results of question three when viewed in the context of including the results of question 2, more business and vocational training provided to those consumers in urban counties, elicit a response that the two may be connected. Perhaps receiving business and vocational training allows a consumer to find competitive employment that pays more per hours because the skills required to complete the job are higher.

These results highlight the importance of having policy planners, professionals, and vendors take a more proactive stand to take a closer look at providing equal or more
business or vocational training to those consumers residing in rural counties. If more business and vocational training could be provided and hourly rate of pay is increased, the VR system is in position to assist the rural population in decreasing the social and economic disparities that exist between urban and rural populations. The VR system (ORSC) is in a position to take the lead in facilitating further investigation and development of the viability of increasing business and vocational training to consumers in rural areas to help increase hourly rate of pay.

Another possible reality to the statistically significant difference in hourly wage at case closure for consumers residing in rural counties may be more endemic to the economic structure of rural areas resulting in fewer options for training and employment. In which case, the VR system, may certainly take the lead on assisting to bring more available training to the rural areas but the viability of such options exists within the larger structure of the state of Ohio. Given, the discussion of state budget cuts, it is doubtful that a needs assessment in this area is of great importance.

Summary of Research Question 4

Most of the differences in services received by county of residence were identified by the logistic regression equation in question two. However, this study is exploratory in nature and the intent is to discover as much information as possible regarding any differences in the vocational rehabilitation experience between those consumers with a primary diagnosis of a mental health disorder residing in urban and rural counties. The services that were identified as statistically significant in the logistic regression equation are Business and Technical Training and Maintenance Services. These services were received by consumers residing in urban counties more than those
consumers residing in rural counties. So, any interpretation of any differences identified in services received or not received are speculative at best.

The results of question four also highlight that there were three services received by consumers residing in urban counties more frequently than those consumers residing in rural counties that were not identified as statistically significant in the logistic regression equation. The three services are: Assessment, Counseling, and Job Finding services. Albeit, the percentage differences of those receiving the services were minimal between those consumers residing in urban and rural counties: a) Assessment Services: 92.3% of urban consumers versus 88.5% of rural consumers; b) Counseling: 71% of urban consumers versus 65% of rural consumers; c) Job Finding: 52.5% for urban consumers versus 57.4% of rural consumers. Of the three services identified, one may posit that Assessment Services and Counseling Services would be more necessary in rural counties in light of results of previous findings. Santos and colleagues (1993) reported that Assertive Community Treatment Teams in rural areas did not focus on employment as an outcome for their consumers with mental illness. If indeed, employment is not encouraged or even identified as a need as often in rural areas, one may expect that Assessment Services would be more necessary to assist in identifying interests, skills, and abilities of consumers seeking employment through the state-federal VR system. However, since the data about the various types of mental health services and vocational services available in the rural areas were not gathered for this study the results could also indicate that providers in the rural areas utilize the Supported Employment model of place then train which may preclude the necessity of an assessment.
Another consideration regarding Assessment Services involves a report from Rubin and Roessler (2000) that on average, 25% of consumers receive Assessment Services. If this percentage is indeed closer to what persons with other disabilities receive, then one is left to surmise that perhaps a higher percentage of persons with a mental illness, in general, benefit from Assessment Services. As such, it may be helpful to administrators in their planning with community partners to ensure that there are an adequate number of vendors prepared to provide Assessment Services to those individuals with a primary diagnosis of a mental health disorder.

Job Finding is another service that one may expect to occur more in the rural counties than urban counties, especially since, working at time of referral was found to have a higher probability of occurring in the urban counties versus the rural counties in the logistic regression model for this data. Keep in mind, Job Finding services are one of the hallmark services in vocational rehabilitation. However, if employment services are not a focus of the mental health professionals, the lower Job Finding services provided for those in rural counties may be attributed to lack of providers, lack of funding, or lack of importance in the lives of consumers.

Implications

The importance of this study is truly exploratory in nature. The goal was to explore any potential differences between the VR experiences between consumers residing in urban and rural counties because of the disparities in the current literature. The focus was on consumers with a mental illness because of the researcher’s experience
and expertise with the population; but additionally, because the VR system has come under attack in not providing appropriate services to this population in general (Conley, 1999; Noble et al., 1997)(regardless of county of residence). However, the ownership is not strictly up to the VR system. The findings by Santos and colleagues (1993) were both helpful and disturbing. They found that Assertiveness Community Treatment (ACT) was beneficial in rural areas but there was no focus on independent living or employment. If most mental health centers utilize ACT, as NAMI requests, then how many of these programs focus on independent living and employment? Could the disparities discovered in this study be reduced by having a more proactive mental health system and VR system?

Additionally, much has been written about the about vocational rehabilitation in rural areas. However, most of the literature that exists outlines the status and the needs of consumers and providers. Typical comments about the status of rural rehabilitation include lack of transportation, jobs, access to services and providers, and attitudinal barriers (Lowry, 1980; Harley, Rice, & Dean, 1996; Harley, Bishop, & Wilson, 2002; Jones & Brand, 1995). Leland and Schneider (1982) investigated persons with disabilities residing in rural areas and reported three major conclusions. First, progress in rural rehabilitation has been little to nonexistent since 1969. Second, persons with disabilities residing in rural areas need services. Finally, the primary barrier to implementing effective rehabilitation services in rural areas is lack of concrete data about persons with disabilities residing in rural areas. A decade later, McFarlane and Griswold (1992) reported similar concerns to those of Leland and Schneider. They posit that professionals have failed to investigate the social, economic, and employment impact on service
delivery and consumer utilization of services in rural rehabilitation. It is hoped that this study is a start in identifying concrete data about persons with mental illness residing in rural areas receiving VR services.

Limitations of Study

A couple of limitations of the study pertain to methodological choices. First, the study consisted of consumers residing in Ohio only. While implications may be made, the results are not generalizable to all persons with a mental illness. Similar studies in other states or utilizing the national database would be needed to confirm the results in other areas.

Secondly, the design of the study was limiting to only consumers that were successfully rehabilitated (status 26). Including cases that were not successfully rehabilitated may highlight more differences in helping to understand the rural population with a mental illness and their experiences in the VR system. In particular, including cases that were not successfully rehabilitated (status 26) may help to identify predictors of success (services and demographic characteristics) that lead to successful employment.

Although missing data was not an identified issue for the variables under study there were some systemic issues regarding missing data. First of all, there are typically fourteen services provided to consumers and coded as receiving the services or not. However, for the fiscal year 2002 data, two services: adjustment services and supported employment had no data. It is unclear how the inclusion of these two services may have altered the results, but the possibility exists that with the inclusion of these two services the logistic regression model may have changed. The lack of supported employment data
is most concerning since, as outlined in chapter two, it has clearly been established as a successful service to facilitate competitive employment.

Future Research

This study provided a useful start to understanding differences in the VR experiences of those consumers with a primary diagnosis who reside in urban and rural counties. The study provided ideas for taking a closer look at the services available to consumers in rural areas. The results of this study melded together with the literature review in chapter two highlight the importance of a services assessment, both within the VR system and in the mental health system. Specifically, transitional employment, assertiveness community treatment teams (ACT), and supported employment (SE) are services that mental health centers provide. As outlined in chapter two, all of these services have been demonstrated to increase competitive employment for persons with a primary diagnosis of a mental health disorder; albeit, ACT and SE are more supported in the literature as facilitating competitive employment for persons with mental illness. Individual studies identifying characteristics and predictors are helpful to both the VR system and the mental health system; however what is unclear by studies and data gathered are how the two systems meld services to help increase the competitive employment rates of consumers with a mental illness. A particular disturbing finding is that ACT may not focus on employment in rural areas but do so in urban areas. Identifying the current service availability in rural areas and their quality would help to increase knowledge about what types of services increase competitive employment and how the VR system can accentuate existing available services.
Additionally, replicating this study in other states or with the RSA national data base may help to elicit more information helpful to the needs of services that increase successful rehabilitation into competitive employment.

A comparison between those consumers who are not successful and those consumers who are successful in obtaining competitive employment may help to elucidate any differences in VR experiences to also highlight where the specific areas of improvement might be for the VR system, if as critics say, they are not doing a good job with consumers with a mental illness (Conley, 1999); Noble et al., 1997).

Additionally, it may be helpful to further clarify why consumers who reside in urban counties earn more per hour that those who reside in rural counties. Perhaps a strategy for controlling certain demographic variables may help to uncover any potential relationships. Likewise, identifying potential regional differences in rural counties may help to highlight specific areas of economic improvement. It would also be of assistance for further clarification to take a look at residing in a suburb as a variable under study.

Lastly, since minimal data exists on current services available and service use patterns in rural areas; qualitative studies may be helpful in an overall plan of promoting improving VR outcomes among persons with a mental illness in rural areas.
REFERENCES


N. Arnold (personal communication, June, 2002)


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