

THE INFLUENCE OF POLICY CHANGE  
ON ORGANIZATIONAL STRUCTURE

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Doctor of Philosophy

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by  
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# THE INFLUENCE OF POLICY CHANGE ON ORGANIZATIONL STRUCTURE

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## ABSTRACT

Public organizations respond to policy change in varied and unpredictable ways. The democratic control of these implementing agents represents one of the greatest challenges in the field of public administration. The current study took a mixed methods approach to exploring how one public organization that experienced a significant policy change responded as well as the policy-relevant effects that resulted from the response. Missouri Vocational Rehabilitation (VR) experienced a significant change in policy as a result of the passage of the Workforce Innovation and Opportunity Act (WIOA). Contingency theory tells us that in response to significant environmental changes, organizations will seek a structural response that aligns with the contingency demands of the environment, but also serves to protect or enhance performance. Describing the current case through the lens of contingency theory allows for attention to be drawn to important aspects of the organizational response that may have otherwise appeared unrelated. The results of this study point to the significant role that task uncertainty played in motivating the organization's structural response to the policy change, as well as provide evidence that the specific response designed by Missouri VR led to anticipated results supporting high level policy goals, but also may have caused unexpected effects on student access to VR services.

## **Chapter I**

### **Introduction**

From the earliest days of public policy implementation research scholars have been interested in better understanding how public organizations react when forced to respond to policy changes. As stated by O'Toole (2012), "Policy implementation almost always requires institutions to carry the burden of transforming general policy intent into an array of rules, routines, and social processes that can convert policy into action." (page 2). The transformation of public policy into action is ultimately the result of a series of formal and informal activities carried out by individual actors operating within public institutions and organizations. Organizational characteristics, such as structure, size, and strategy play an important role in the degree to which public policy goals are achieved since they can influence organizational actors in both predictable and unpredictable ways. It is through each organization's unique organizational characteristics that policy intent is converted into action, ultimately leading to the policy-relevant performance outcomes experienced at the citizen-level.

Using a mixed methods case study approach, this study will first analyze qualitative data collected via interviews with key organizational actors and, through the lens of contingency theory, offer causal explanations for the structural changes enacted by one public organization as a result of significant policy changes. This study will then rely on administrative data to estimate the effects of the designed response to the new policy mandate on policy-relevant performance outcomes. Results will offer support for the tenets of contingency theory by demonstrating the significant effects of key

environmental changes, such as a new policy mandate, on organizational structure, as well as offer insights into both the predictable and unpredictable nature of policy-relevant performance outcomes resulting from such structural changes.

### **Background of the Problem**

The problem that this study addresses is to better understand how distinct government organizations respond in seemingly unpredictable and varying ways to the same policy. Such organizational response variety to the same policy mandate poses significant issues where consistency in public policy implementation is concerned. As Meyers and Vorsanger (2003) tell us, “The democratic control of implementing agents is a perennial public administration concern” (p.245). Organizations implement policy through a variety of unique filters, which can produce varying policy-relevant effects for the citizens that the policy is intended to serve. In his classic book, Allison (1971) notes that defining a policy choice is only 10% of the work of policy change, the remaining 90% is dependent on the processes of implementation. In other words, policy is dependent on the organization for implementation, and, as such, the characteristics of the organization and the decisions of the individuals who comprise it are of significant importance.

To address this problem, the current study positions the organization, specifically how it responded to significant policy change and the effects of its selected strategic response to a new policy mandate, at the forefront of the analysis. This is an area that needs more attention within the field of policy implementation research. Hill and Hupe

(2014) argue that the study of policy implementation should be seen as a part of the study of organizational behavior; the two are so highly inter-related that they should not be studied in isolation. Implementing organizations provide organizational, managerial, and administrative imperatives that shape what happens at the operational level of service delivery (O'Toole, 2012). As public agents responsible for administering programs authorized by elected officials, government organizations are particularly susceptible to influence from the extra-organizational environment. Events such as the onset of significant policy change often necessitate a significant shift within internal organizational decision-making processes in an effort to achieve new policy-relevant goals. Morgan (2006) describes the organization as an organism and tells us that, "organizations are open systems that need careful management to satisfy and balance internal needs and to adapt to environmental circumstances" (p.42). Like living organisms, organizations, through their drive to pursue homeostasis and avoid demise, must consistently develop new and oftentimes innovative ways to meet the challenges posed within their environments and ultimately survive. The interplay between each organization's unique environment, the unique internal characteristics of each organization, and the organization's inherent quest for survival creates a condition for variety in reactionary responses across seemingly similar organization types. In the face of change, organizations must seek a response which accurately assesses and predicts the conditions of the environment, yet also assesses and predicts the internal characteristics of the organization itself in a way that fosters growth, transformation, and ultimately survival. The dilemma that ultimately emerges is that public organization

decision-makers must seek to resolve the tension between policy compliance and their individual preferences and beliefs about the intentions and goals of the organizations they lead. The individualized approach required to resolve this dilemma ultimately leads to non-uniform policy implementation strategies which have the potential to impact policy-relevant outcomes in unpredictable ways.

## **The Policy Implementation Environment**

### *Vocational Rehabilitation in Missouri*

This section will provide a detailed description of the empirical environment of the current case study. In order to set the stage for the analysis, it is important to first develop a deep understanding of the context for the development of the organizational response to be studied. The case in study is how one public organization, Missouri Vocational Rehabilitation (VR), implemented significant and complex policy changes associated with serving high school students with disabilities as mandated by the passage of the federal Workforce Innovation and Opportunity Act of 2014 (WIOA), and the effects of its policy implementation efforts on policy-relevant performance outcomes in Missouri.

To fully understand the influence of WIOA on Missouri VR as an organization, it is first important to position Missouri VR within the larger federal VR program in the United States. The federal-state VR program has been operating in various forms for more than 100 years in the United States. The modern federal-state VR system is comprised of 78 individual state-run organizations, which are supported via a

combination of federal and state resources. Each organization is charged with administering the VR program to youth and adults alike, as authorized by The Rehabilitation Act of 1973, which was most recently re-authorized as Title IV within WIOA. The overarching purpose of The Rehabilitation Act is to “empower individuals with disabilities to maximize employment, economic self-sufficiency, independence, and inclusion and integration into society...” (p. 4). The U.S. Department of Education’s Rehabilitation Services Administration (RSA) awards grant funds to each state VR organization, which in turn is responsible for administering the VR program in and throughout its designated state or geographic territory. An individual who is deemed eligible for services under the VR program works with VR staff in their state or territory to develop a plan to acquire a specific job, and subsequently access a wide-range of VR services which are necessary to aid that individual in becoming employed.

Missouri VR is one of two federal-state VR organizations operating in Missouri. Most states have designated a single VR organization, although twenty-three states have separate organizations; one serving individuals who are blind or visually impaired and one serving individuals with disabilities who are not blind or visually impaired. Missouri VR is situated within the Office of Adult Learning and Rehabilitation Services within Missouri’s Department of Elementary and Secondary Education (DESE). Missouri VR provides services to individuals with a broad range of disabilities. Missouri’s other VR organization, Rehabilitation Services for the Blind, is exclusively responsible for serving people who are blind or visually impaired and is housed within Missouri’s Department of Social Services. Both of Missouri’s VR organizations are adherent to the

same federal policy, but they operate within two different political and organizational contexts as they are situated within two distinct Departments at the state level.

*New Expectations for Serving High School Students with Disabilities*

The reauthorization of the Rehabilitation Act under WIOA invoked several significant changes for the nation's VR programs, although perhaps none as significant as services to youth and students with disabilities. In its purpose statement, The Rehabilitation Act, as authorized under WIOA, states, "A high proportion of students with disabilities is leaving secondary education without being employed in competitive integrated employment, or being enrolled in post-secondary education; and there is a substantial need to support such students as they transition from school to postsecondary life." (p 4). Recognizing that early exposure to career-oriented services for high school students with disabilities can lead to better adult employment outcomes, WIOA expands on the vocational services that had traditionally been made available to high school students with disabilities. This expansion constituted arguably the most notable and significant changes under WIOA at the time of its passage. Several new policy mandates emerged related to serving high school students with disabilities. First, The Rehabilitation Act, as authorized under WIOA, required VR agencies to dedicate a minimum proportion of their spending on the delivery of services to students with disabilities. With the passage of WIOA, VR organizations were mandated to begin spending at least 15% of their federally allocated grant on the provision of five newly created pre-employment transition services. Pre-employment transition services were defined to constitute the following five services: job exploration counseling; work-based

learning experiences; post-secondary education counseling; workplace readiness training; and instruction in self-advocacy. See table 1 for a list of each of the five required pre-employment transition services and examples.

*Table 1: Five Required Pre-employment Transition Service Categories and Examples*

Pre-Employment Transition Service	Examples
Job Exploration Counseling	Career Assessments and Job Shadowing
Work-Based Learning Experiences Employment	Internships, Volunteering, and Paid
Post-Secondary Education Counseling	College Exploration and Academic Planning
Workplace Readiness Training	Mobility training and Soft Skill Training
Instruction in Self-Advocacy Mentoring	Requesting Accommodations and Peer

Second, in addition to the five required pre-employment transition services, nine authorized pre-employment transition services were identified: 1) implement strategies to increase the likelihood of independent living; 2) develop strategies for individuals with intellectual and development disabilities to live independently, participate in post-secondary education experiences, and obtain and advance in competitive integrated employment; 3) provide instruction to VR counselors and school personnel on supporting people with disabilities; 4) disseminate information about innovative, effective, and efficient approaches to achieve the goals of providing pre-employment transition services; 5) coordinate transition services with local education officials; 6) apply evidence-based findings to improve policy, procedure, and practice in order to better achieve the goals of pre-employment transition services; 7) develop model



transition projects; 8) establish multi-state or regional partnerships to better achieve the goals of pre-employment transition services; and, lastly, 9) disseminate information and strategies to improve the transition to postsecondary activities of members of traditionally underserved populations. VR organizations were permitted to receive credit toward their 15% spending requirement by providing these additional nine authorized services only if they had first made available the five required pre-employment transition services to all eligible and potentially eligible students with disabilities in their state, but in doing so had not been able to expend their full 15% requirement.

A third major change was the expectation that VR organizations begin to make available the five required pre-employment transition services to “potentially eligible” students with disabilities in addition to those identified as eligible. This was perhaps the most significant change and will constitute the focus in the current study. Potentially eligible individuals are defined as students with disabilities, ages 14-21, who are enrolled in secondary or postsecondary education, and who may benefit from the provision of one or more of the required pre-employment transition services. Prior to WIOA, VR services (i.e. job training, college, job placement assistance, etc.) were only available to individuals who were determined to be eligible for VR services. Eligibility required that an individual first apply for VR services and, based on the evidence of a disability that limited their ability to access or retain employment, be determined to either be eligible or not eligible to receive VR services. Prior to WIOA, VR programs across the country regularly provided services to individuals who were enrolled in high

school and other secondary settings at the time of application. WIOA required VR organizations to continue to serve those high school students with disabilities who had applied for VR services and were determined eligible, as well as the corresponding population of potentially eligible high school students with disabilities.

Lastly, WIOA brought with it several other new requirements associated with supporting the post-secondary employment needs of high school students with disabilities. VR organizations were required to develop written agreements with education and state workforce development officials to ensure that its efforts were being coordinated with both schools and employers locally. Additionally, VR organizations were required to ensure that they engaged in person-centered planning meetings for individuals with intellectual and developmental disabilities receiving employment services locally under a Medicaid waiver. Finally, VR organizations became responsible for ensuring that pre-employment transition services be made available to anyone age 24 years and under who was interested in entering a sub-minimum wage employment setting.

#### *Policy Implementation Challenges and Questions*

As an employee of Missouri VR at the time that WIOA was introduced, the researcher was in a position to directly observe some of the earliest conversations happening both within Missouri VR and across the nation regarding how to best comply with the mandates of the new law. As a result, the researcher was able to make several important observations which helped to inform the design of the current study. Many of the aspects of WIOA took effect immediately following the President signing the Act into

law in 2014. While various aspects of the law and its expectations were prescribed (see previous section), VR organizations were responsible to determine how best to implement these changes within their jurisdictions. With little to no advance notice, VR organizations were essentially handed a law that contained provisions that had already gone into effect. In the months after the law was passed, RSA offered some clarifying implementation guidance in the form of webinars, presentations at conferences, policy directives, and technical assistance circulars. However, the final WIOA implementation regulations were not published in the Federal Register until August of 2016, more than two years after the law was passed. Dealing with incomplete information during those first two years, the nation's VR organizations were forced to make quick decisions; independently deciding how to implement these significant policy changes. Adding to the policy implementation challenge was the fact that, by and large, VR organizations had long been serving eligible high school students with disabilities prior to the advent of WIOA. These new requirements forced VR agencies to think quickly and creatively about how to balance compliance with the new law with continuing to meet the service demands of their eligible high school student and adult program participants.

In the days following the passage of WIOA, Missouri VR, along with the nation's other 77 VR programs faced the same big questions, namely, *where do we start with developing our plan to implement these new required changes to the manner that VR services are made available to high school students with disabilities? Can we leverage existing resources to make ourselves available to all of our state and territories' potentially eligible students with disabilities? How will we design or re-design service*

*delivery options that align with the five required pre-employment transition services?*

*How will we ensure that we spend at least 15% of our federally allocated grant on these services? How will we conceptualize the impact of these new expectations on the non-student populations that we are also committed to continue to serve? As every VR organization was forced to immediately address these challenges, these important questions, and others, served to guide the response of the nation's VR organizations to these significant policy changes.*

#### *Missouri VR's Response*

Prior to WIOA's passage in 2014, Missouri VR had a track record of investing significant resources toward serving high school students with disabilities. While the Rehabilitation Act of 1998, which was authorized under WIOA's predecessor the Workforce Investment Act (WIA), certainly addressed and supported the delivery of VR services to high school students with disabilities, it issued no specific service mandates regarding serving youth and students. Missouri VR's position within DESE permitted it to be closely connected to conversations and efforts associated with improving post-secondary outcomes for high school students in Missouri, which is a shared concern between other units within DESE and Missouri VR. Supported by this relationship, Missouri VR was heavily involved with various statewide stakeholder committees and work groups tasked with improving post-secondary outcomes for high school students with disabilities across the state. Beyond participation in statewide committees and task forces, Missouri VR demonstrated its commitment to the cause of serving this population by assigning a VR counselor to serve each of Missouri's public and charter

high schools. Additionally, all of its counselors were trained on how to partner with their assigned high schools and how to deliver VR services to high school students with disabilities. This commitment to serving high school students was exemplified by the fact that during the last full VR program year prior to the passage of WIOA (program year 2014, which ran July 1, 2013 through June 30, 2014) 33% of all VR participants served were enrolled in high school when they applied for Missouri VR services.

Equipped with the language of the law, Missouri VR recognized that the approach to serving high school students that it had been employing to date would not satisfy the new requirements as laid out under WIOA. As will be described in Chapter IV, concerns were centered around existing counselor capacity to serve the new population of potentially eligible students with disabilities and ensuring that the five required pre-employment transition services were available to potentially eligible and eligible students with disabilities across Missouri. First, serving potentially eligible students with disabilities was new, and given the volume of students in Missouri that this represented (approximately 25,000 high school students), it did not seem practical for the existing counselor infrastructure to continue to serve VR eligible participants in addition to potentially eligible participants. This was particularly challenging given the fact that all VR counselors serve both high school student and adult participants. Second, while there wasn't initial clarity from the law regarding what counted toward the 15% spending mandate, it was generally agreed that Missouri VR was not spending 15% of its federal grant allocation on services comparable to the newly defined five required pre-

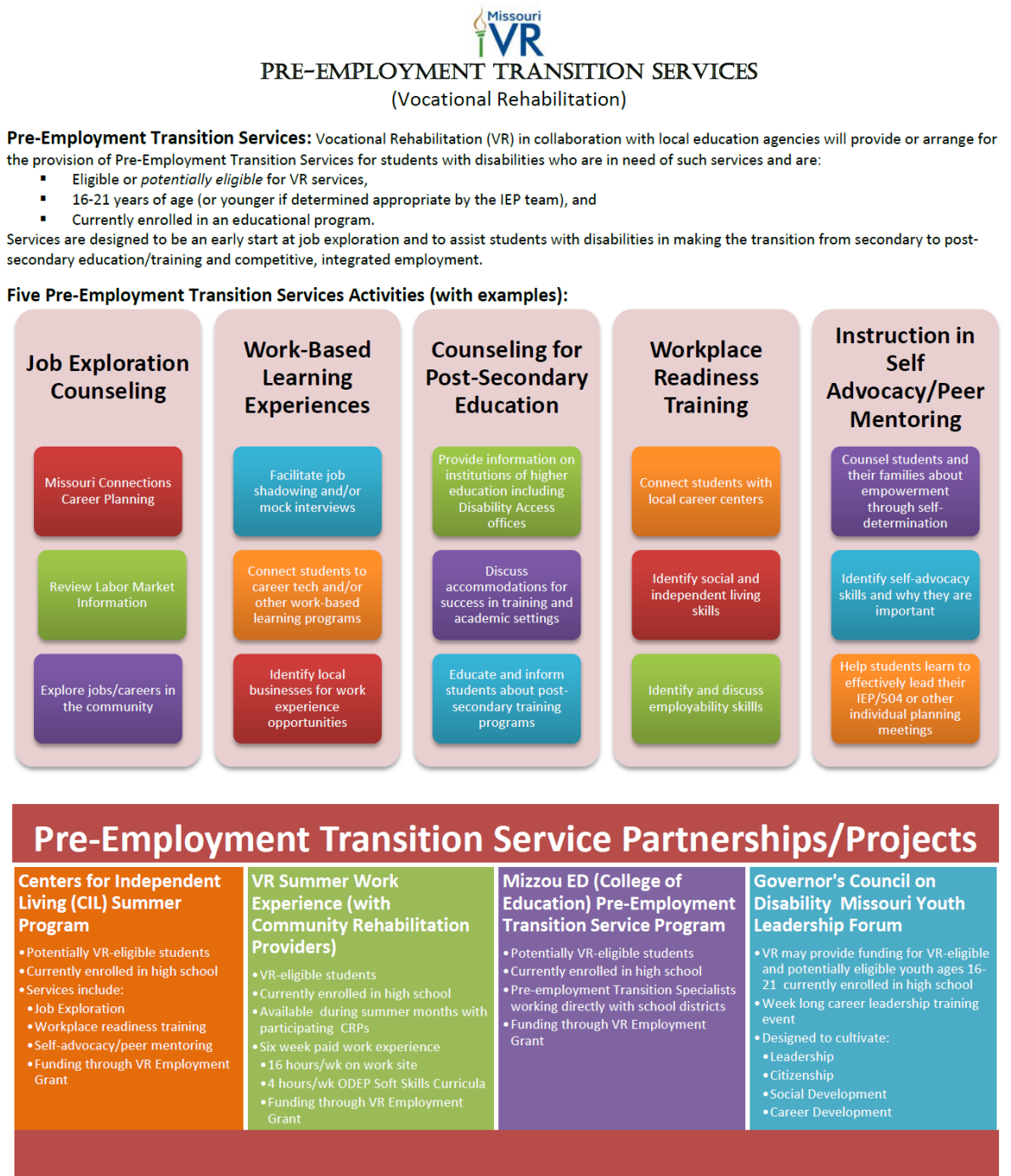
employment transition services or the nine authorized services, which meant that new service delivery options would need to be developed.

Missouri VR was forced to conceptualize how the five required pre-employment transition services could be integrated into its service delivery system and made available to eligible and potentially eligible students with disabilities. Focusing on these implementation challenges, Missouri VR's leadership looked inward first, fostering internal dialogue among the organization's leaders and subject matter experts in an effort to seek solutions. Missouri VR's organizational structure plays an important role in understanding the decision-making process that ultimately led to its initial response to the introduction of the pre-employment transition services and serving potentially eligible high school students with disabilities. Individuals at the "top" of the organization were responsible for the development of the policy-informed state-wide programmatic solutions. In spite of the fact that implementing regulations were not available, and subsequently would not be available for more than two years after the passage of WIOA, Missouri VR's director charged the executive leadership team and relevant subject matter experts to proceed with the development of programmatic responses that were grounded in those aspects of the law that appeared to be clear and posed a low risk of being reinterpreted when the final regulations were ultimately published. The result of their work was to slightly expand the responsibility of Missouri VR's existing counselors to contribute toward meeting the demands of the policy mandate, but most significantly was the development of an array of new service projects to be delivered by external partners, each intentionally designed to meet the definition of at

least one of the five required pre-employment transition services and be made available to potentially eligible and eligible students alike.

During the weeks and months after WIOA was signed into law, Missouri VR staff with various program responsibilities were consulted for recommendations on the development of specific service projects that could be employed to ensure compliance with the policy mandates. A variety of ideas were generated, shared, and discussed among the upper level leadership and key decision-makers within the organization. Ideas that had merit in the eyes of the director were encouraged and progressed into development. Figure 1 provides a descriptive overview of Missouri VR's initial response.

Figure 1: Missouri VR's Pre-Employment Transition Services



Source: <https://dese.mo.gov/media/pdf/vr-pre-ets-overview>



The top section of figure 1 describes the various activities and/or services that counselors could provide to VR eligible students with disabilities and how each activity corresponds to one or more of the five required pre-employment transition services. Each of the examples provided under the five required pre-employment transition services described in figure 1 were services that VR counselors had been trained to provide prior to the passage of WIOA. By translating those previously existing services into the new required five pre-employment transition services, Missouri VR's leadership was helping its counselors understand how the work that they had been doing, and were continued to be tasked to do, aligned with the new language of the law. In order to capture this work, new mechanisms were put in place allowing counselors to report the amount of time that they spent providing any of the five pre-employment transition services. Using their salary as a basis, their reported time was translated into dollars, which were applied toward the 15% spending requirement.

The bottom section of figure 1 briefly describes four new types of statewide partnerships and projects that constituted the bulk of the remaining programmatic response. Leveraging partnerships to deliver these five required services to eligible and potentially eligible high school students with disabilities was an important part of the Missouri VR response, as well. Three of the four partners identified in figure 1, namely the Centers for Independent Living, Community Rehabilitation Programs, and the Governor's Council on Disability, were entities that Missouri VR had established relationships with prior to the passage of WIOA. The fourth partner listed, the University of Missouri, was a new partnership that emerged out of the anticipated unmet needs of

Missouri VR in response to the new policy mandates of WIOA. The four new services and programs described in figure 1 were each implemented during 2015. The funds used to support each of the services and programs that were developed in conjunction with external partners were applied toward the 15% spending requirement.

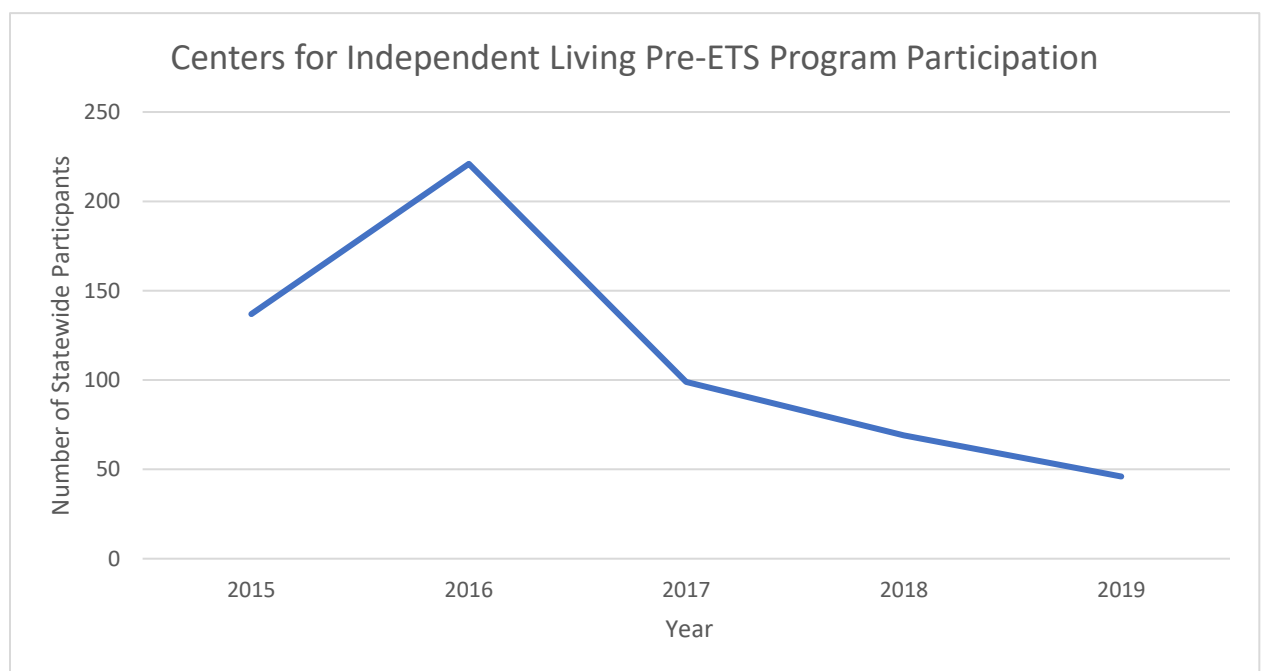
In the earliest days of developing these new services and programs, Missouri VR leaders had little information available to make predictions about the impact of each program. As a result, the number of participants, as well as the corresponding dollars spent supporting each program varied widely. While it was not the intention of program designers to achieve the policy goals with any one program, collectively the following 8 partners were enlisted to develop services to meet the demands of the policy mandate: Centers for Independent Living; University of Missouri-Columbia; Community Rehabilitation Programs; The Governor's Council on Disability; Wonderland Camp; University of Missouri – Kansas City; Boone County Family Resources; and Discover Your Future. The first four, Centers for Independent Living, University of Missouri-Columbia, Community Rehabilitation Programs, and the Governor's Council on Disability offered services and programs that were available as early as the fall of 2015, while the remaining four partnerships developed services and programs over the subsequent years through 2019. The next several sub-sections will offer a program-by-program description of each provider and services that comprised Missouri VR's policy response.

#### *Centers for Independent Living*

Missouri has 22 Centers for Independent Living, distributed across the state, each of which provides services to people with disabilities to increase their

independence and their opportunity to participate in day-to-day life within their communities. Each center is charged with providing peer counseling, advocacy, information and referral, independent living skills training, as well as services that facilitate transition of youth to post-secondary life. Each of Missouri's 22 Centers for Independent Living were offered the opportunity to develop new programs designed to align with one or more of the five required pre-employment transition services and be available to potentially eligible and eligible students with disabilities. Several centers elected to develop pre-employment transition programs, which were delivered over the summer months beginning in 2015. Figure 2 describes the number of students who participated between the first year of the partnership's existence, in 2015, through 2019. Table 2 describes the dollars expended on supporting student participation during the same period of time.

*Figure 2: Line Graph of Centers for Independent Living Pre-ETS Program Participation*



*Note: Year = Program Year (July 1 through June 30)*

*Table 2: Dollars Expended on Centers for Independent Living Pre-ETS Programs*

Year	\$ Expended
2015	\$18,093
2016	\$34,808
2017	\$31,790
2018	\$13,692
2019	\$16,176

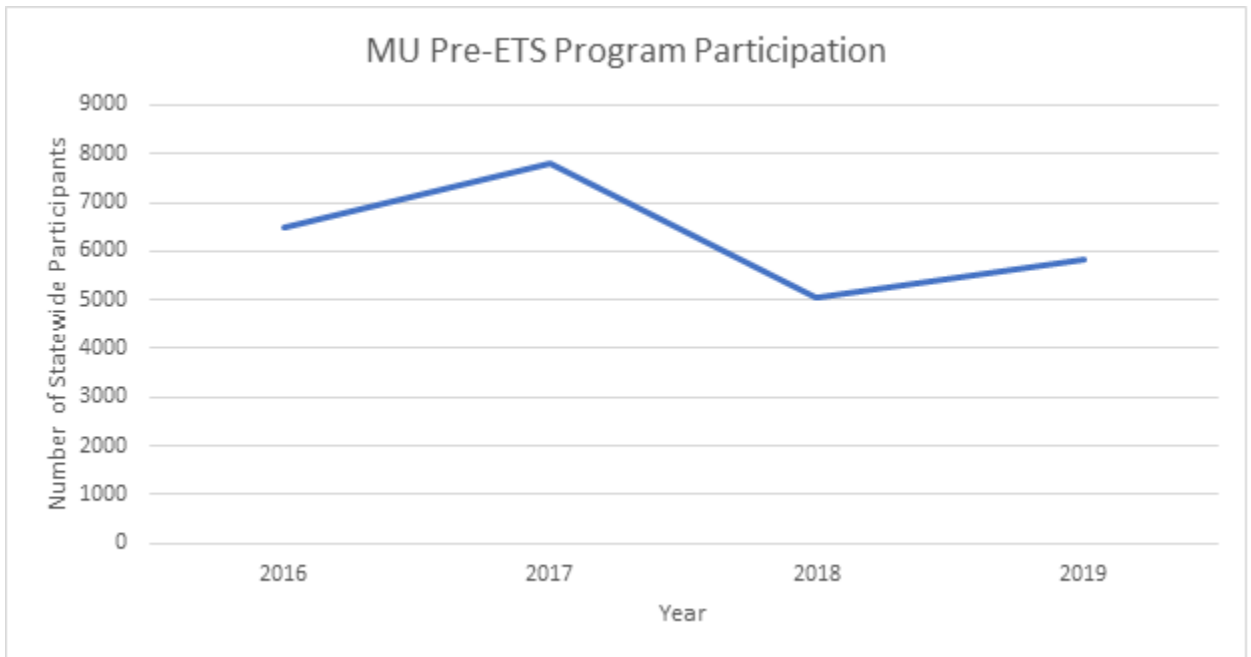
*Note: Year = Program Year (July 1 through June 30)*

### *University of Missouri-Columbia*

As a result of the new policy expectations, a new partnership was developed with the University of Missouri College of Education’s regional professional development center to provide the five required pre-employment transition services to potentially eligible students with disabilities across Missouri. Newly developed pre-employment transition (Pre-ETS) specialists were hired and trained to provide each of the five required pre-employment transition services statewide to potentially eligible students with disabilities. These MU Pre-ETS specialists were positioned all across the state and were assigned to outreach to each of Missouri’s public and charter high schools beginning with the 2015-2016 school year. Once relationships with schools were established the Pre-ETS specialists assisted students that had been referred to them by school staff in first determining what pre-employment transition services might be helpful for them and then offered those services throughout the course of the school year, typically in the high school setting. They were also expected to work in conjunction

with the local VR counselors to inform and connect students, teachers, and parents to VR eligible services, as needed. Figure 3 describes the number of students who participated between 2016 and 2019. Although 2015 was the first year of the program's existence, the number of students served was not collected, however the total dollars expended was available. Table 3 describes the dollars expended on supporting student participation during the same period of time.

*Figure 3: Line Graph of MU Pre-ETS Program Participation*



*Note: Year = Program Year (July 1 through June 30)*

Table 3: Dollars Expended on the MU Pre-ETS Program

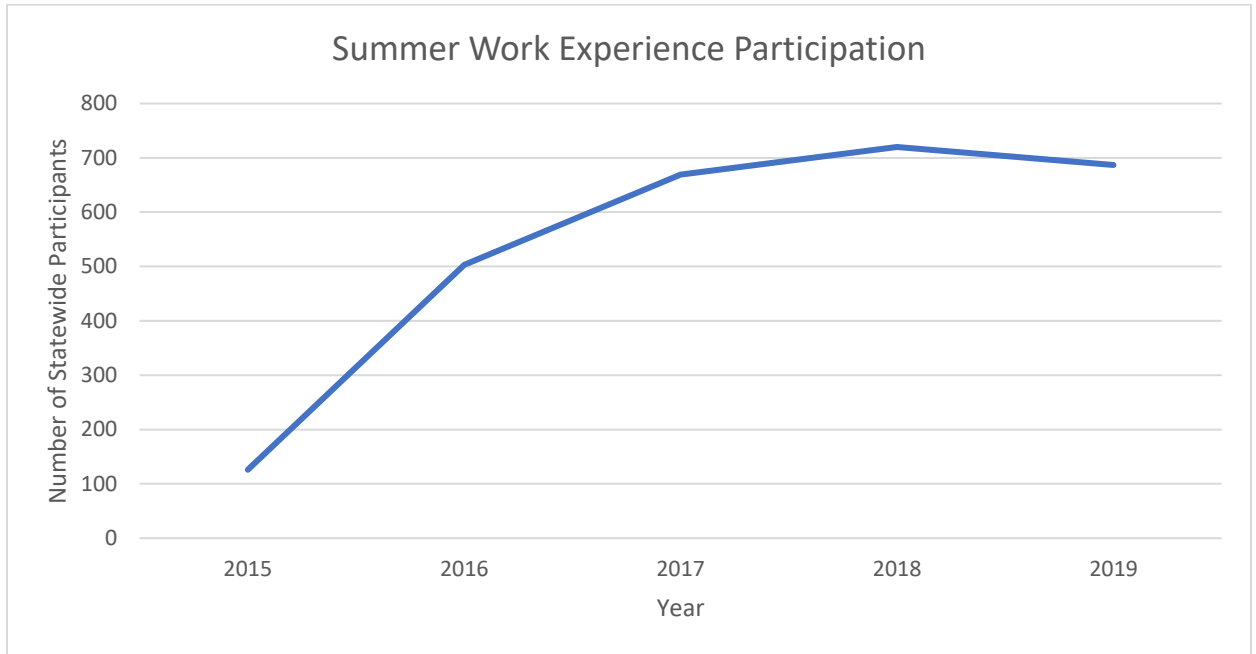
Year	\$ Expended
2015	\$410,849
2016	\$1,643,394
2017	\$3,079,033
2018	\$3,076,915
2019	\$4,221,144

Note: Year = Program Year (July 1 through June 30)

### Community Rehabilitation Programs

Missouri VR also made available the summer work experience for the first time during the summer of 2015. The summer work experience was for *eligible* high school students with disabilities and facilitated by Missouri VR's extensive existing statewide network of local Community Rehabilitation Programs. The service consisted of a twenty-hour-per-week, six-week long, paid work experience, which also included four hours of soft skills training. Through a combination of the direct work experience itself as well as the soft skill training, participants could potentially receive all five of the required pre-employment transition services. Figure 4 describes the number of students who participated between 2015 and 2019. Table 4 describes the dollars expended on supporting student participation during the same period of time.

Figure 4: Line Graph of Summer Work Experience Participation



Note: Year = Program Year (July 1 through June 30)

Table 4: Dollars Expended on the Summer Work Experience

Year	\$ Expended
2015	\$168,200
2016	\$888,000
2017	\$1,070,032
2018	\$2,068,198
2019	\$2,234,642

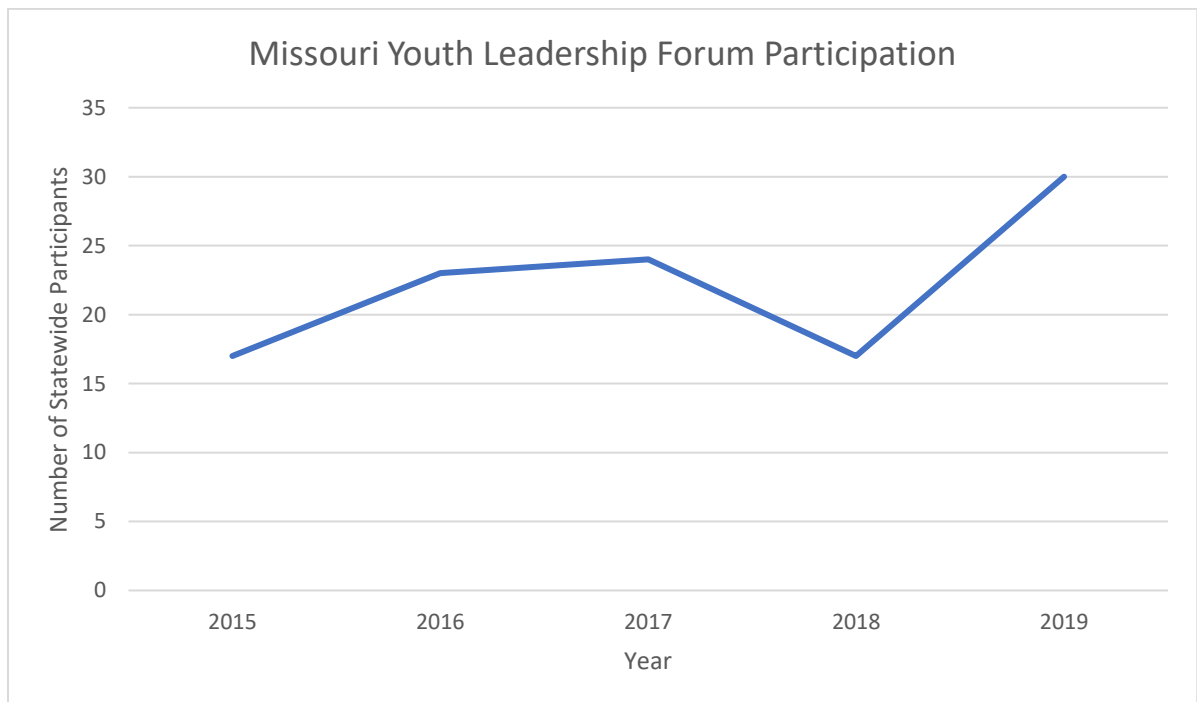
Note: Year = Program Year (July 1 through June 30)

### The Governor's Council on Disability

The Missouri Youth Leadership Forum offered by the Governor's Council on Disability was made available to potentially eligible and eligible high school students with disabilities during the summer of 2015. Participants attended the week-long

Missouri Youth Leadership Forum held on campus at the University of Missouri-Columbia. The experience was designed to assist high school students with disabilities to develop leadership skills, career strategies that increase their potential for employment, learn about the inclusion of people with disabilities in all aspects of society, and have an opportunity to participate in policymaking practices that affect young people with disabilities. This experience offers students the opportunity to engage in experiences that connect to each of the five required pre-employment transition services. Figure 5 describes the number of students who participated between 2015 and 2019. Table 5 describes the dollars expended on supporting student participation during the same period of time.

*Figure 5: Line Graph of Missouri Youth Leadership Forum Participation*



*Note: Year = Program Year (July 1 through June 30)*



*Table 5: Dollars Expended on the Missouri Youth Leadership Forum*

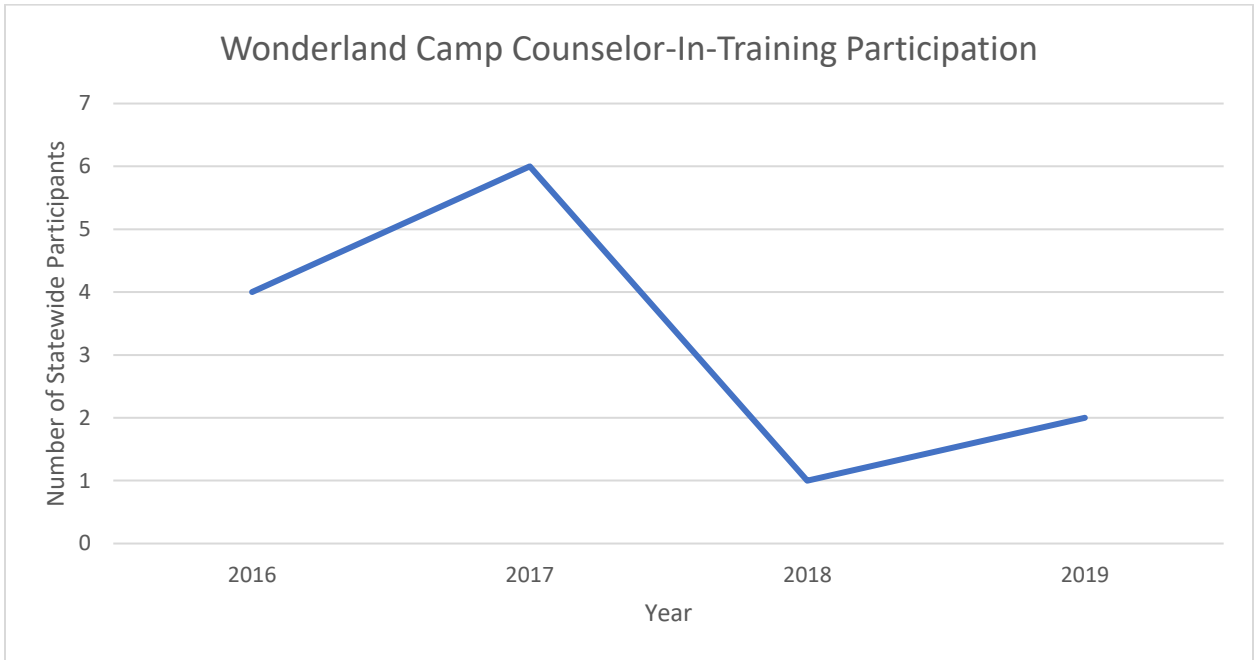
Year	\$ Expended
2015	\$27,998
2016	\$36,601
2017	\$33,000
2018	\$43,500
2019	\$75,000

*Note: Year = Program Year (July 1 through June 30)*

### *Wonderland Camp*

Wonderland Camp is a summer camp designed exclusively for youth and adults with disabilities in central Missouri. Missouri VR partnered with the Central Missouri Workforce Development Board and Wonderland Camp administrators to provide work-based learning experiences for eligible students with disabilities who were employed at the camp as camp counselors-in-training. The experience spanned a period of 10 weeks during the summer months and was made available to eligible and potentially eligible students with disabilities. Figure 6 describes the number of students who participated between the first year of the partnership's existence, in 2016, and 2019. Table 6 describes the dollars expended on supporting counselors-in-training during the same period of time.

Figure 6: Line Graph of Wonderland Camp Counselor-In-Training Participation



Note: Year = Program Year (July 1 through June 30)

Table 6: Dollars Expended on Wonderland Camp Pre-ETS program

Year	\$ Expended
2016	\$16,500
2017	\$23,650
2018	\$25,300
2019	\$5,500

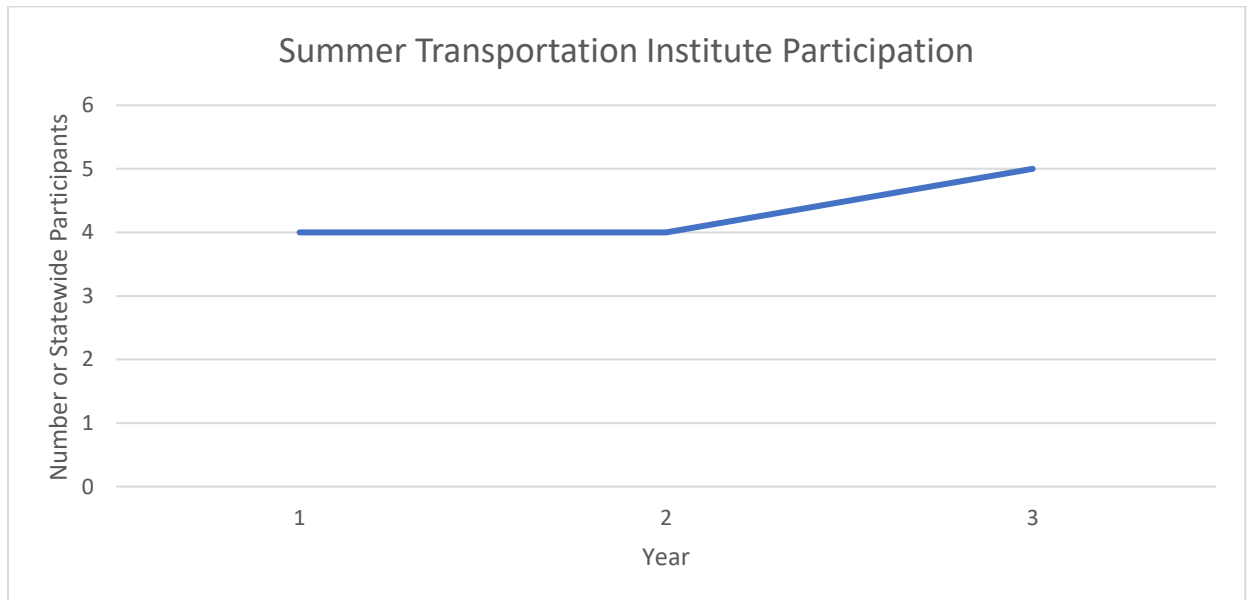
Note: Year = Program Year (July 1 through June 30)

*University of Missouri – Kansas City*

Beginning in 2016, Missouri VR partnered with the University of Missouri - Kansas City to make available opportunities for local potentially eligible high school students to participate in its Summer Transportation Institute. This experience was designed to provide insights and information into career pathways in the transportation

industry. Participants had an opportunity to explore careers associated with land, air, rail, and water. They also learned about the government and private businesses associated with the transportation industry. Figure 7 describes the number of students who participated between 2016 and 2018, which was the final year of the program’s existence. Table 7 describes the dollars expended on supporting student participation during the same period of time.

*Figure 7: Line Graph of Summer Transportation Institute Participation*



*Note: Year = Program Year (July 1 through June 30)*

*Table 7: Dollars Expended on the Summer Transportation Institute*

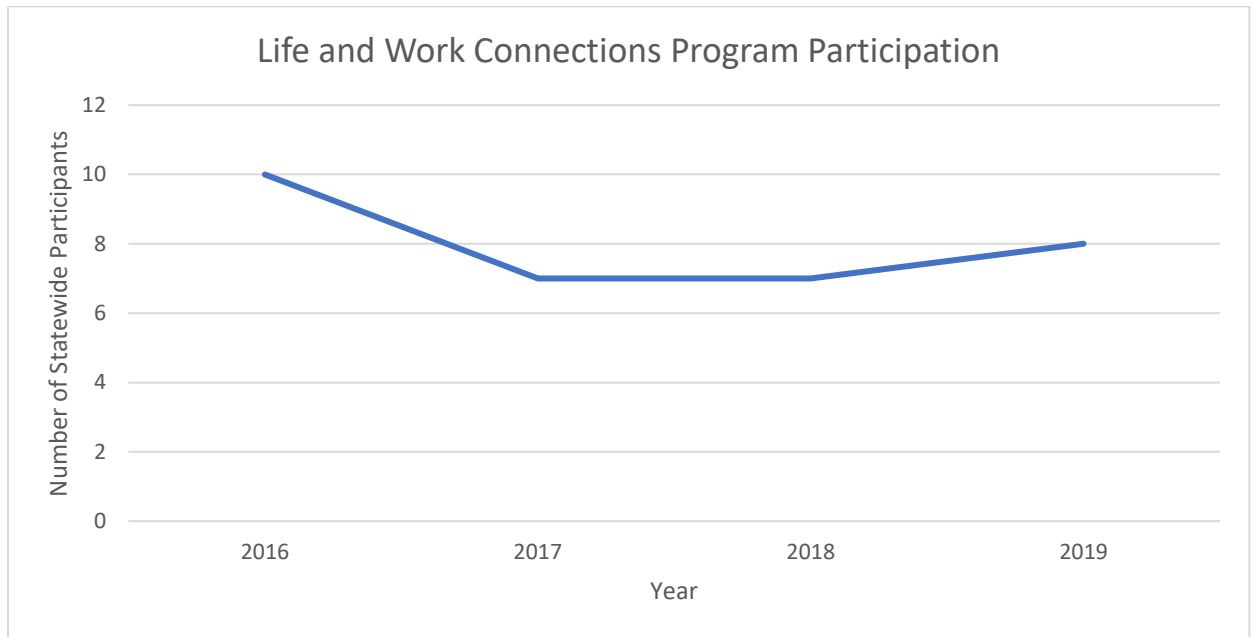
Year	\$ Expended
2016	\$10,000
2017	\$8,000
2018	\$10,000

*Note: Year = Program Year (July 1 through June 30)*

*Boone County Family Resources*

Beginning in 2016 Missouri VR began partnering with Boone County Family Resources to support their Life and Work Connections program. This program provided the opportunity to experience the full array of pre-employment transition services to potentially eligible students in a group setting twice weekly during the summer. Figure 8 describes the number of students who participated between 2016 and 2019. Table 8 describes the dollars expended on supporting student participation during the same period of time.

*Figure 8: Line Graph of Life and Work Connections Program Participation*



*Note: Year = Program Year (July 1 through June 30)*

*Table 8: Dollars Expended on the Life and Work Connections Program*

Year	\$ Expended
2016	\$2,118
2017	\$1,638
2018	\$1,638
2019	\$1,764

*Note: Year = Program Year (July 1 through June 30)*

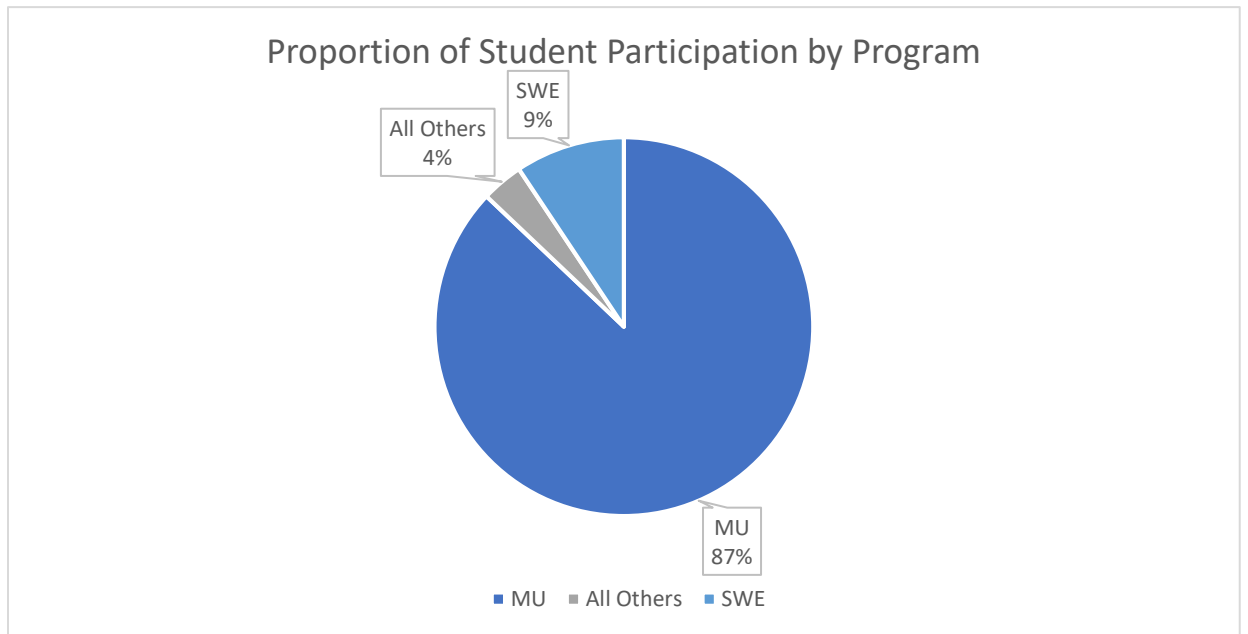
### *Discover Your Future*

In 2019 Missouri VR began supporting participants in a one week on-campus event called Discover Your Future, which is offered at Gallaudet University in Washington D.C. or Rochester Institute of Technology in Rochester New York. This experience was available to potentially eligible and/or eligible high school students who are deaf or hard of hearing and are entering grades 10-12. This event is designed to provide an on-campus experience helping students work on their post-secondary career plans by exploring their career interests and skills. Students had an opportunity to explore post-secondary training options, receive career guidance, participate in job exploration activities, and practice self-advocacy skills. In 2019, Missouri VR supported five students in the program and expended \$3,500.

Having now described each partner and program separately it's important to understand how collectively these partnerships and programs were leading Missouri VR toward compliance with the new policy mandate. We can see from figure 9 that the vast majority (87%) of participants receiving pre-employment transition services from one or

more of these eight partners during the years 2015 through 2019 participated in the University of Missouri Pre-ETS program. We also see that 9% of all participants were involved in the summer work experience, and that collectively, participants in the remaining six programs summed to only 4% of the total number of participants across all programs.

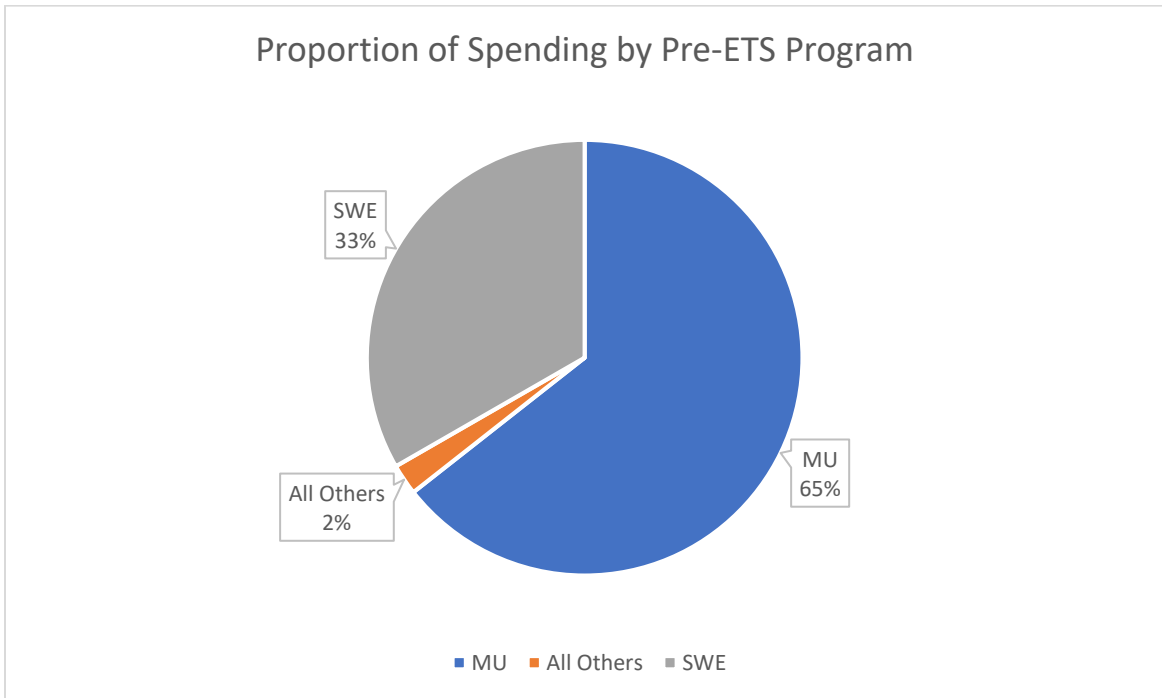
Figure 9: Pie Graph of Proportion of Student Participation by Program



Note: MU = University of Missouri Pre-ETS program and SWE = summer work experience provided by community rehabilitation providers.

Additionally, as depicted in figure 10, we see that the highest proportion of dollars expended across all eight partnerships and programs was to the University of Missouri Pre-ETS program (65%). The summer work experience constituted the second highest category of dollars spent (33%) while dollars spent on participation in the remaining six programs summed to 2% of the total number of dollars spent across all programs.

Figure 10: Pie Graph of Proportion of Spending by Pre-ETS Program

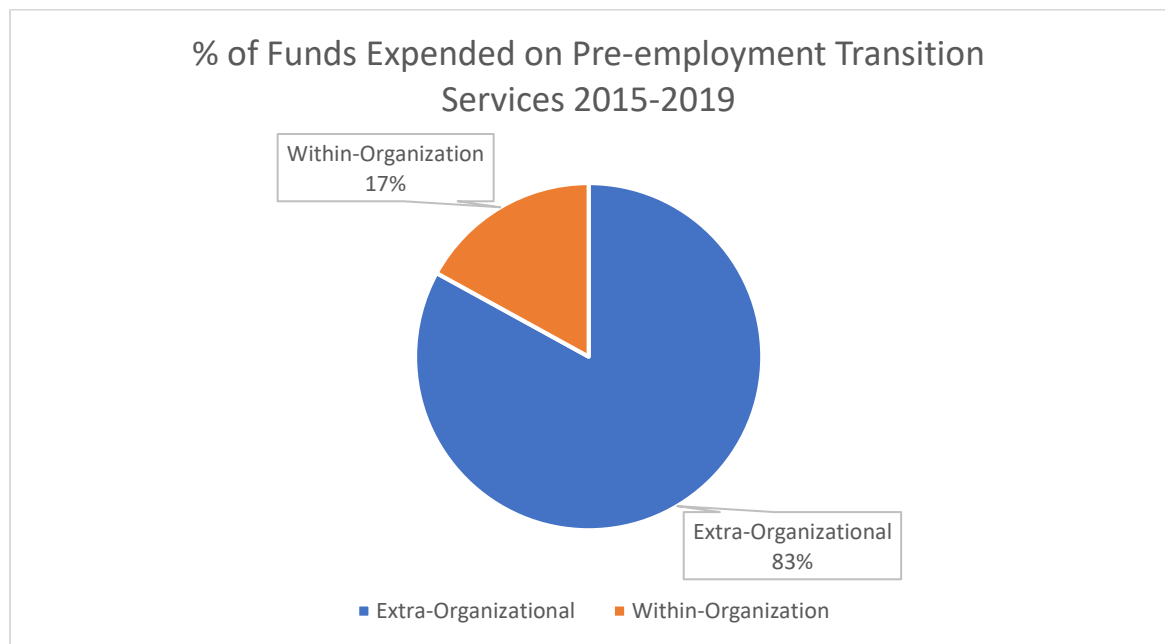


Note: MU = University of Missouri Pre-ETS program and SWE = summer work experience provided by community rehabilitation providers.

As described, each of the nation’s 78 VR organizations were required to ensure compliance with the mandate to expend at least 15% of its federal grant funds on the provision of the five required pre-employment transition services and make them available to potentially eligible and eligible high school students with disabilities. Missouri VR elected an approach that involved its existing counseling staff to a degree, but relied heavily on the purchase of services through a network of existing and new external organizations. Figure 11 describes the associated percentage of costs allocated by each type of service provider (within-organization and extra-organizational), which were attributed toward the 15% spending requirement. The only services provided directly within the organization by VR staff were those pre-employment transition

services delivered to eligible students with disabilities by VR counselors. The extra-organizational services were comprised of those services purchased and delivered by the various external partners described above. It's important to emphasize that while the VR counselor may not have been responsible for the bulk of the pre-employment transition service delivery activity they were still involved to various degrees in the coordination of service-related activities between their assigned local high school and the extra-organizational parties delivering the purchased services. As can be seen in figure 11, the strong majority of Missouri VR's policy implementation response were delivered via its newly designed extra-organizational service delivery structure.

Figure 11: Pie Graph of % of Funds Expended on Pre-employment Transition Services 2015-2019



The development of Missouri VR's extra-organizational structural response to the policy mandates of WIOA represents *the* major strategy for how Missouri VR chose to respond. Utilizing partner organizations to deliver VR services is not unique to the



manner in which VR services in Missouri have been delivered historically. Prior to WIOA, VR counselors would make applicant eligibility determinations, provide initial guidance and counseling services to eligible participants, and maintain contact while the participant was receiving various purchased services (i.e., post-secondary training, job search assistance, job placement assistance, etc.) from an external partner organization. What makes Missouri VR's programmatic response different and the current case worthy of study is that when it comes to serving the *potentially eligible* students with disabilities, the VR counselor was essentially excluded from directly serving these students, thus creating a new, extra-organizational structural dynamic that did not exist prior to WIOA. Missouri VR elected to have the potentially eligible students with disabilities in its state served exclusively by its external partners. This response, while perfectly acceptable within the tenets of WIOA and within the local context in Missouri state government, presents an opportunity to explore the manner in which the new policy mandates and their intentions were filtered through these new organizational processes and the impact that these decisions have on policy-relevant performance outcomes that affect high school student access to VR services.

### **Problem Statement**

The primary problem that this study addresses is the unpredictable way in which public organizations respond to significant environmental changes such as a new policy mandate. Such unpredictability poses problems from a public administration perspective. While certain types of policy levers, such as the policy mandate described above, can drive organizations toward the achievement of broad policy goals, the

dynamics that are unique to each public organization exert significant influence, which can also lead to less predictable policy-relevant effects. In the current study, Missouri VR, along with the nation's 77 other VR programs, was tasked with a mandate to immediately begin to spend at least 15% of its federal grant on the delivery of five required pre-employment transition services and make those five services available to all potentially eligible students with disabilities in the state. What's more is that these mandates were not accompanied by any additional resources, forcing state VR organizations to be creative in their response and likely causing significant variation in the type of policy responses designed across the nation's VR organizations. While this study is not designed to explore the effects of such response variation across VR organizations, it will address the research problem by taking a detailed look at how the specific type of response designed and implemented by Missouri VR affected how high school students accessed and received VR services in Missouri. In doing so, this study will take a deep dive into understanding factors that caused the design of the extra-organizational structural response and the impact of the extra-organizational service design on policy-relevant performance outcomes. Identifying the underlying causal mechanisms leading to such a structural response, as well as estimating the effects (intended and otherwise) of the structural response offers important insights that can inform future policy design and contribute to improved policy-relevant performance outcomes.

## **Purpose**

What makes the current case interesting and worthy of study is the seemingly strong assumptions that were made by federal policy makers that an unfunded mandate to spend a prescribed amount of money on predetermined services could be implemented with predictably only positive effects on high school students with disabilities. While the core tenets of the mandate (for each VR organization to spend 15% of its federal grant on pre-employment transition services and make them available to all potentially eligible students with disabilities statewide) seem straightforward, such an approach also largely ignores or neglects to account for the myriad organizational factors that can influence how VR agencies choose to serve high school students. The purpose of this study is to use the lens of structural contingency theory to explore the response of one public VR organization that experienced a significant policy change, and then estimate the policy-relevant effects that resulted from the response. A convergent parallel mixed methods design will be used. In this design, qualitative and quantitative data are collected in parallel, analyzed separately, with the results compared and related for the purpose of drawing conclusions (Creswell, 2014). Structural contingency theory predicts that organizations, in an effort to maximize performance, will work to fit their structure to the contingency factors of the organization (Donaldson, 2001). In the current study, a primary environmental contingency factor of the organization was the significant change brought about by the new policy mandate for Missouri VR to spend 15% of its federal grant on pre-employment transition services and to make those services available to all potentially eligible high school students in Missouri. Interview

data will be used to explore factors operating within the organization, which provide a causal description of the organization's selected response to significant changes in the policy environment brought on by the passage of the WIOA as it relates to providing VR services to high school students with disabilities in Missouri. Administrative data will then be used to describe the effects of the structural response on policy-relevant outcomes not prescribed by WIOA, which will serve as additional measures of organizational performance. These additional policy-relevant performance outcomes are defined as follows: 1) change in statewide high school student access to, and receipt of, VR services prior to and after the introduction of the new policy; 2) the degree to which potentially eligible students later became VR eligible participants; and 3) change in the influence of demographic and local high school characteristics of high school students receiving VR services following introduction of the policy response. By employing a mixed methods approach, the results of this study will describe how specific organizational contingencies contributed to the adopted structural response and also provide explanations of how the adopted structural response affected policy-relevant performance.

### **Significance of the study**

As described above, Missouri VR elected to employ an organizational response through the use of a new extra-organizational service structure that was designed to satisfy the new policy mandate to provide pre-employment transition services to potentially eligible students with disabilities. An extra-organizational service approach is not necessarily uncommon among public organizations, as a common strategic response

to the organizational challenges of implementing new policy is to entice other organizations to cooperate with them (Meier and O'Toole, 2006). Prior studies have focused on the development of interdependent institutional arrangements for implementing policy (Lubell, 2004; Schneider, et. al, 2003; Bardach, 1998). Additionally, prior studies point to the need for implementing organizations to develop relationships with extra-organizational entities for the purpose of achieving policy outcome goals (Agranoff and McGuire, 2003; Bogason and Toonen, 1998; Kickert, Klijn, and Koppenjan 1997; Klijn, 1996; Mandell, 2001; McGuire, 2002; O'Toole 1997; Provan and Milward, 1995). While the literature includes studies of how government organizations enlist the aid of extra-organizational entities in order to constitute a response to policy implementation, little to no research exists that explores the causal factors motivating an extra-organizational policy response and the subsequent effects of the response on policy-relevant outcomes and performance.

Additionally, this study has significance from a VR program administration perspective. Despite the fact that WIOA is now nearly eight years old, little remains known about the impact of this significant policy change on VR organizations and outcomes. While the implementation challenges and questions may have been common among the nation's VR organizations, each one crafted a response that was unique to their needs and influenced by their characteristics. Some early analyses of the initial responses of state VR organization's implementation of pre-employment transition services were conducted by the National Council on Disability in 2017 and the United States Government Accountability Office in 2018. Both of these reports focused on the

role of RSA and to a lesser degree on the efforts of the state-level VR organizations. Additionally, the academic literature has also attempted to capture what happened in response to the introduction of pre-employment transition services across the nation. Miller, Sevak, and Honeycutt (2018) compared aspects of the early implementation efforts of ten VR agencies, which included Missouri VR. Their results were limited to a description of how organizations responded to the introduction of serving the potentially eligible and providing pre-employment transition services. While informative, their results were not able to offer insights into how and why the resultant implementation responses were developed, nor were they able to make any causal argument as to the influence of aspects of those policy responses on policy-relevant performance outcomes. Additionally, a study by Carlson, Thompson, and Monahan (2020) reviewed the publicly available pre-employment transition service policies of thirty-eight VR organizations. The authors were able to show how the policy responses were similar and different, but again, without more detailed access to data they were unable to draw any causal conclusions about effects on policy-relevant outcomes. To date, these studies have helped to describe the variation in the programmatic responses of many of the nation's VR programs; however, if we are to more fully understand the policy implementation response we must be able to uncover how the impact of the complexities of the new policy were perceived and interpreted, as well as the influence of organizational and individual actor-level factors on the organization's policy response.

## **Research Questions**

This mixed methods study included the collection of qualitative and quantitative data to answer these research questions:

*Overarching Research Question:* How do changes in the policy environment influence organizational structure and subsequent policy-relevant performance?

*Sub-questions:*

- 1) What factors explain Missouri VR's structural response?
- 2) How did Missouri VR's structural response affect policy-relevant performance?

## **Assumptions**

The researcher made several assumptions at the onset of this study. First, this study was limited to one VR organization, Missouri VR. Although Missouri VR can be characterized as a generally typical VR organization in terms of size, environment, and structure, the scope of the study is limited to the characteristics of this single organization and those of its employees and partner organizations. Second, the researcher utilized a convenience sampling strategy to identify interviewees. As such, the results of the qualitative data analysis will be limited to the responses provided by those participants, which represents a relatively small proportion of all potential interviewees. Third, the researcher assumed that those research participants who were interviewed would speak candidly. This assumption is important to disclose and consider as the researcher was employed by Missouri VR, and while the researcher has no reason to believe that interviewees were not speaking candidly, the possibility of bias

in their responses certainly could exist due to the nature of the pre-existing relationship between the researcher and the interviewees. Lastly, the researcher assumed that all data entered into the administrative data set is accurate and true; the data set utilized for the quantitative analyses is an administrative data set wherein data entry is conducted by field staff, and is thus not a data set designed specifically for research purposes.



## Chapter II Literature Review

This study explores factors that motivated Missouri VR's organizational structural response to the mandates to provide pre-employment transition services to potentially eligible students with disabilities and then assess the effects of the structural changes on policy-relevant performance outcomes. These goals position the current study squarely within the academic purview of public policy analysis and public administration research. Peters and Pierre (2012) state that, "The principal activity of public administration is implementing laws" (p.2). Those laws, however require elaboration by the implementing organizations and the manner in which they are ultimately implemented gives them meaning. Leaning on traditional public policy analysis questions such as, *what are the content, causes, and consequence of public policy?* along with questions from the public administration academic domain, such as *how is legislation executed?* as guidance, will help us to ultimately better understand not only how the public policy changes described in the current study are carried out, but also how they are transformed during the policy implementation process leading to subsequent policy-relevant performance outcomes. Research conducted in these areas has traditionally drawn from a number of different academic disciplines in order to explain and predict how implementing organizations behave, and in turn the impact of those behaviors. As such, two specific areas of literature influenced the design and implementation of this study: public policy implementation research and organization theory. The Integrated Implementation Model (Winter 1990; Winter and Nielsen, 2008)

will be discussed first for the purposes of offering a conceptual framework to guide the understanding of the role of organizational structure within the larger public policy implementation processes. The remainder of the chapter will rely on a description of organization theory, specifically structural contingency theory and related salient research to explain how public organizations adapt to demands coming from the environment such as significant policy change.

### **Public Policy Implementation Research**

While a unified theory of public policy implementation does not exist, the past four to five decades have produced research that addresses implementation problems and questions from a wide range of approaches. For the most part, implementation researchers point to Pressman and Wildavsky's book *Implementation* (1973) as a key moment in the history of modern public policy implementation research. In their book, the authors sought to understand how well a federal economic development program in Oakland, California was ultimately implemented, and also understand how it might have been better implemented. Inspired by the case study depicted in their book, the field of policy implementation research has subsequently focused largely on discovering and understanding key policy implementation variables that impact policy goal achievement.

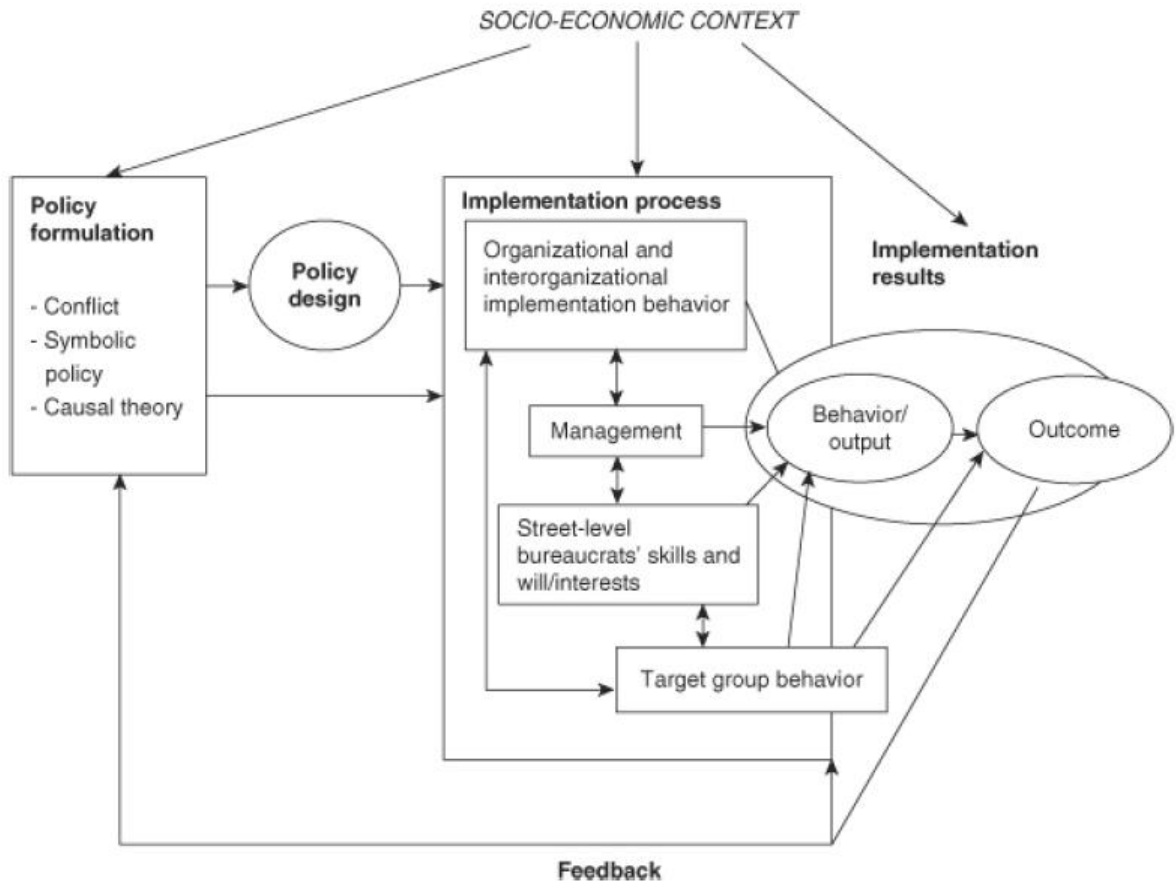
While the volume of implementation research focusing specifically on factors that influence policy goal achievement peaked in the decade after Pressman and Wildavsky's inspirational work, the past two to three decades have seen a substantial amount of research that, while published under other labels, can certainly be classified

as falling within the public policy implementation research domain. For example, labels such as public administration, public management (Boyne, 2004; Meier and O'Toole, 2007), regulatory enforcement (May and Winter, 2000), policy compliance (Winter and May, 2001; Parker and Nielsen, 2012), street-level bureaucracy (Lipsky, 1980), principal-agent theory (Brehm and Gates, 1999), governance (Bogason, 2000; Lynn, et. al. 2001), networks (O'Toole, 2000), as well as policy design and policy instruments (Salamon, 2002) each involve the study of policy implementation. While these labels may seem to be indicative of a tangential research agenda, each area contributes to the literature and knowledge base united by a drive to address the central research problem described in this study, namely deepening the understanding of how public organizations respond to policy demands. While each of the studies mentioned above help to explain various aspects of policy implementation processes, we see that in order to more fully address the public policy implementation problem, one must isolate specific aspects of the complex public policy implementation process to be studied, breaking the myriad factors and processes down into manageable objects of academic interest.

### *Conceptual Framework*

As mentioned, no general theory of policy implementation has emerged, leaving scholars to draw from various theoretical perspectives to explain what is happening in policy implementation settings. In an attempt to organize and integrate various explanatory variables which have emerged from implementation research to date, Winter (2012) proposed the Integrated Implementation Model (see figure 12).

Figure 12: The Integrated Implementation Model



Source: Winter 2012 (page 258, Figure 1).

Through an explanation of variables which affect various aspects of the policy process, the Integrated Implementation Model seeks to offer a framework for public policy implementation analysis. Each factor within the model is intended to contribute toward the policy implementation results. Starting on the left-hand side, research on the policy formulation process has revealed how policy formulation conflict can drive subsequent ambiguous policy goals, how an invalid causal theory that fails to connect policy goals and means to achieve them can influence outcomes, and how symbolic

policies offer the appearance of addressing a problem, but ultimately don't provide the means to address the policy goals (Winter, 2012). Moving to the right, selected policy design instruments (i.e. mandates and incentives) are positioned to be influenced by the policy formulation activities as well as strongly influencing the subsequent implementation processes. The Integrated Implementation Model identifies a set of four implementation process factors, which are used to directly explain the implementation results. The first set focuses on organizational behaviors, to include interorganizational behaviors, which illuminate degrees of commitment to the implementation process and coordination decisions regarding how to carry out those decisions. The second set of factors focuses on the role of management. The third set of factors highlights the behavior of the street-level bureaucrat operating within the implementing organization. The fourth set of factors focuses on the role of the policy target group(s), as citizens can influence the behaviors of policy implementation actors and thus influence policy implementation results. On the far-right hand side, the model depicts implementation results as being comprised of two distinct but related components: behavior and outcomes. Behavior represents constructs associated with how the implementation process changes how administrative actors behave in practice, whereas outcomes describes measurable accounts of what happened. Finally, the model assumes that all of these activities are operating within the larger socio-economic context, emphasizing the importance of understanding and acknowledging the influence of the unique social and economic factors on each stage of the model (Winter 2012).

Relying on the conceptualization of policy implementation research inspired by the Integrated Implementation Model, this study will assess the impact of Missouri VR's organizational and extra-organizational behavior on implementation results, specifically policy-relevant outcomes. This study will draw on organization theory, namely structural contingency theory to explain how environmental influences motivated the organizational response leading to the addition of new extra-organizational structures. In the spirit of prior policy implementation research, this study seeks to isolate specific aspects of the complex public policy implementation process for deep analysis, which offers new contributions intended to increase the collective understanding of the policy implementation problem.

### **Organization Theory**

Broadly speaking, the stream of literature that has emerged from organization theory supports the importance of understanding how organizations impact the behavior of individual actors, and in turn how those behaviors impact policy outcomes. Organization theory is admittedly a bit of a misnomer, as there is no single, unified theory of how organizations act, but rather many sub-theories, which seek to explain the influence of organizations. By relying on literature borne out of organization theory, the current study will seek to expand the application of these theories into the public policy implementation context. Additionally, describing the policy implementation experience of one public organization, Missouri VR, through the lens of contingency theory will allow for seemingly unrelated emergent organizational characteristics and variables to be united for the purposes of not only deepening the understanding of what

happened in the current case, but also in terms of generalizing the results of this study to other public policy implementation environments.

### *Contingency Theory*

One sub-type of organization theory, the contingency theory of organizations, provides a foundation for understanding how organizations react and respond to changes (contingencies) in their environments. It is one of the major theoretical lenses used to view organizations and has substantial empirical support (Donaldson, 2001). Contingency theory tells us that organizational effectiveness is the result of fitting characteristics of the organization to reflect the situation of the organization (Burns and Stalker, 1961; Lawrence and Lorsch, 1967). The concept of “fit” can be described as the degree to which the combination of various organizational characteristics and their contingencies lead to improved performance. Fit is a fluid state, which is oftentimes difficult to objectively define. As soon as contingencies emerge and/or organizational characteristics change, the risk of impact on performance emerges, resulting in a re-evaluation of fit of those operating within the organization. As a result of this inter-dependent relationship, organizations are constantly seeking to achieve fit while also avoiding misfit and are thus adapting over time in a drive to maintain effectiveness (Donaldson, 2001).

Leaders in the field of organizational development and management spent much of the post-industrial 20<sup>th</sup> century seeking to better understand how organizations can be most effectively structured and managed. The “classic” approach to organizational management placed high value on organizational structure and well-designed

processes. Shortly thereafter, the human relations movement emerged emphasizing the value of attending to the needs of the individuals that comprise the organization and their contributions to the overall success of the organization. Modern contingency theory was, in many ways, borne out of a reaction to both the classic management and human relations movements. Contingency theorists tell us that there is no “best” way to organize. In the contingency theorist’s view, organizations share common attributes in their response to environmental pressures which can be universally applied. Burrell and Morgan (2000) tell us that “In its present state, the contingency approach really stands for a little more than a loosely organized set of propositions which in principle are committed to an open systems view of organisation, which are committed to some form of multivariate analysis of the relationship between key organisational variables as a basis of organisational analysis, and which endorse the view that there are no universally valid rules of organisation and management” (p.167). It is through this lens of contingency theory that the nature of the unique relationship between key organizational contingencies and various organizational characteristics gain importance.

### *Structural Contingency Theory*

Within the broader literature concerning contingency theories of organizations lies the sub-theory of structural contingency theory. Structural contingency theory focuses specifically on structure as the organizational characteristic of interest. In much the same way as with the general contingency theory of organizations, structural contingency theory tells us that there is a “trivariate relationship between structure, organizational contingencies, and performance” (Donaldson, p. 6). As a result,



organizations adopt structures that fit the changing level of the contingency. In other words, the contingency has a deterministic influence on organizational structure.

Contingencies of organizational structure can occur both outside of and within an organization. Research has identified several such contingencies that affect organizational structure. Within -organizational contingencies such as task uncertainty (Gresov, 1990), task interdependence (Thompson, 1967), organizational size (Blau, 1970), and strategy (Miles and Snow, 1978), as well as extra-organizational contingencies such as environmental change (Child, 1975) are some of the better-established contingencies within the literature base. Uncertainty plays an influential role in structural contingency theory. For example, when the environment changes significantly with little to no notice, uncertainty for actors within the organization is generated, which in turn creates uncertainty in the tasks to be conducted within the organization. The effects of environmental and task uncertainty often become expressed in the form of structural modifications to the organization in an effort to improve fit. Burns and Stalker (1961) tell us that when task uncertainty is high organizations must rely on the expertise and initiative of internal actors to make decisions for the sake of innovation and a drive toward effectiveness. In other words, the organization's actors find themselves in a situation wherein they are "filling in the blanks", so to speak, in response to their uncertainty, and those blanks become an opportunity for organizational actor discretion to have influence on organizational structural changes.

We can see some empirical evidence of the effects of the interplay between environmental changes causing uncertainty and subsequent organizational structural response from the work of Walcott and Hult (1990; 1995). The authors suggest that certain types of structures emerge to cope with uncertainty in decision-making situations brought about by environmental changes. In their study of how the organization of U.S. Presidential White House staff structures changed over the years, Walcott and Hult (1995) demonstrated how over the course of several presidencies, models of organization shifted. As presidents changed, and with it, ideas about how best to organize, the need to maximize the reliability of decision-making for the commander-in-chief persisted. Examining the Hoover through Carter presidencies, the authors highlight how the organization of the White House staff changed over time, many times quite significantly. On each occasion, the structure employed was determined to work (or fit) best given the environment within which each administration was operating. In other words, the demands of the environment along with the preferences of the commander-in-chief continuously changed to achieve fit. Additionally, Donaldson (1987) analyzed how organizations experiencing a misfit of structure to strategy changed in response to low performance. The results of his study showed that organizations experiencing misfit were greater than four times more likely to change only their structure, as compared to choosing to change other aspects of the organization, providing empirical support for the powerful effect of misfit on decisions to make subsequent structural changes. Furthermore, Donaldson reported that of those organizations included in the study that changed *only* their structure, 72% of them

moved from misfit to fit, evidencing the power of organizational structure on responding to performance demands. Both of these studies provide empirical support for key tenets of structural contingency theory, which are being used to evaluate the current case in study, namely the significant influence of key contingencies on organizational structural change and in turn the influence of organizational structural change on performance.

### *Organizational Behavior*

Referring back to Winter's Integrated Implementation Model (2012), a key aspect of this study involves understanding the role of organizational and extra-organizational behavior on policy implementation results. Specifically, how the type of organizational structural response developed by Missouri VR in response to the policy change coming from the environment influenced policy-relevant performance. It is quite common for public organizations to develop extra-organizational relationships, such as those developed by Missouri VR, in order to meet performance demands. In the United States a significant number of regional and local public programs operate with reliance on some form of extra-organizational relationship (Hall and O'Toole, 2004; O'Toole and Meier, 2004; O'Toole and Montjoy, 1984; Agranoff, 2007). Oftentimes, the demand to successfully implement policy requires cooperation among independent actors in the face of impediments (O'Toole, 2012). The development of such extra-organizational relationships tends to take one of three forms (O'Toole, 2012):

- 1) **Authority** (Organization B cooperates with organization A because B feels obligation to do so);
- 2) **Common interest** (Organization B cooperates with organization A because B feels that doing so toward the overall objectives would also serve B's own purposes); and
- 3) **Exchange** (Organization B cooperates with organization A because B receives something else from A).

Such extra-organizational relationships come in a variety of operational forms with no "one best design" available for all situations. Like task uncertainty, task interdependence is a within-organization contingency that can cause certain types of extra-organizational arrangements to emerge in response to environmental changes (Donaldson, 2001). Task interdependence classifies in what ways activities within or between organizations are connected with each other. Thompson (1967) defined three types: pooled (indirect connection between tasks); sequential (assembly-line style one-way connection); and reciprocal (direct two-way connection). The type of relationship selected is contingent on the demands that the organization is responding to in an effort to maximize fit. While maximization of fit is the driver in the selection of a structural response, the type of extra-organizational relationship implemented also comes with unique challenges. For example, in a sequential setting adding more units in the organizational chain can increase opportunities for roadblocks, while a reciprocal relationship may experience challenges associated with competing interests or unclear goals among the multiple involved organizations (Donaldson, 2001). While the capacity

for effective action becomes enhanced, implementation tasks also become more complicated where multiple extra-organizational relationships exist as new initiatives get layered onto existing programs and activities.

Extra-organizational designs require public administrators to operate beyond the traditional hierarchical means within their own organizations, seeking support of external organizations in order to carry out tasks associated with achievement of policy-driven goals. Several studies have advocated the general importance of extra-organizational networks for the implementation of public policy (Agranoff and McGuire 2003; Klijn 1996; Provan and Milward 1995; Rhodes 1997). Drawing from the literature on extra-organizational management, we can see evidence that supports the impact of these types of structural responses on performance. Meier and O'Toole (2001) studied the effects of certain types of management practices in school districts in Texas. They found that superintendents who engaged in more interactions with extra-organizational partners were more efficient at generating key outputs than superintendents adopting other management styles. Additionally, Nicholson-Crotty and O'Toole (2004) studied the effects of extra-organizational management within the law enforcement setting. They showed that those managers tasked with managing internally and externally focused networks who focused their efforts internally achieved adequate results, but those who also focused on engaging with external partners achieved better results.

As evidenced, extra-organizational networks can be an effective approach to achieving policy goals in response to environmental demands. However, as O'Toole and Meier (2004) surmise, such network arrangements can have a dark side, which

managers and scholars alike need to consider. The authors show that the administration and management of these networks adds a degree of complexity that doesn't exist in situations wherein an implementing organization is acting alone. They add that the incorporation of additional perspectives can shift the policy emphasis during implementation. An empirical example of this phenomenon is described in their 2004 study involving data collected from more than 1,000 Texas school districts designed to assess the effect of extra-organizational networking behavior on performance. The authors reported that while beneficial to overall goal attainment, the effect of the networks appeared to disproportionately benefit the school's more advantaged students. The implications of these findings support the notion that introducing extra-organizational actors into the policy implementation processes can be an effective approach for the achievement of high-level goals, but it is often not without unanticipated costs.

### **Unique Contributions of the Current Study**

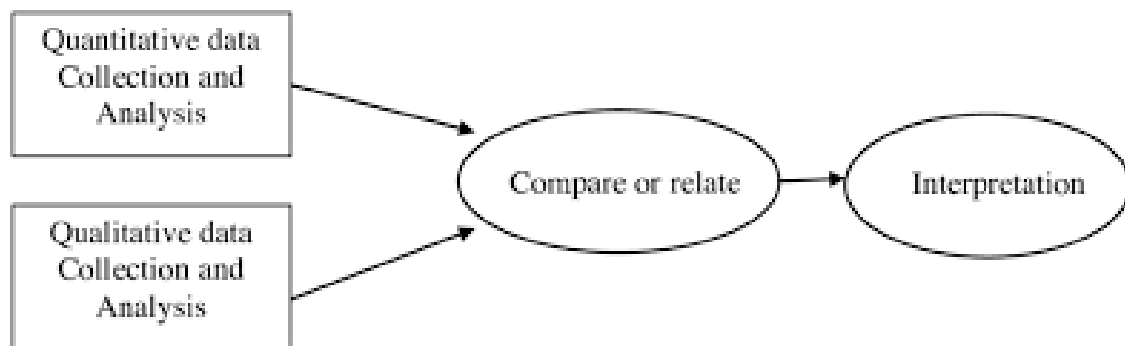
The importance of bringing organization theory into the policy implementation realm cannot be overstated. According to Bozeman (2013), recent policy studies that use organization theories do so in an attempt to help shed light on particular policy realms, such as education policy, labor policy, and health and human service policy. However, none of these relate directly to the influence of organization theory on policy implementation. Well-designed public policies need to consider an understanding of organizations and extra-organizational dynamics. The results of this study offer a significant contribution to the literature by offering a detailed description, through the

lens of contingency theory, of the factors motivating the organization's decision to adopt an extra-organizational policy response and also by reporting results that describe the resultant policy-relevant performance. Results will expand the literature base in the area of contingency theory and the effects of extra-organizational arrangements in delivering policy outcomes. Additionally, while a small number of government reports and published studies have provided a description of the effects of pre-employment transition services on high school students with disabilities, no known studies exist that seek to offer a causal explanation of policy-relevant performance outcomes in this domain. Developing an understanding of mechanisms driving policy-relevant outcomes in the area of pre-employment transition services has important practical implications given the significant volume of resources that have been committed by the nation's 78 VR organizations charged with its implementation since July of 2014.

### Chapter III Methods

The purpose of this study is to use the lens of contingency theory to explore the response of one public organization that experienced a significant policy change, and then estimate the policy-relevant effects that resulted from the response. A convergent parallel mixed methods design was used. Using this design, qualitative and quantitative data were collected in parallel, analyzed separately with the results compared and related for the purpose of drawing conclusions (Creswell, 2014). See figure 13 for a visual depiction the convergent parallel mixed methods design.

Figure 13: Convergent Parallel Mixed Methods Design



Source: Creswell 2014 (page 220, Figure 10.1)

During the qualitative data collection phase of the study, the researcher explored the factors influencing the policy response design, as well as the subsequent impact of the policy response design on the behavior of key policy implementation actors. Qualitative data were collected via thirteen interviews with individuals, eleven of whom were employees of Missouri VR and two who were employed by the University of Missouri's (MU) Pre-ETS program. The MU Pre-ETS program employees were selected as



representatives of Missouri VR's extra-organizational partnerships, because, as described in Chapter I, the MU Pre-ETS program was the major external provider of pre-employment transition services for Missouri VR, both in terms of the number of participants and amount of funds expended. Specifically, interviews were conducted with three high-level leaders within Missouri VR, each of whom played a significant role in formulating Missouri VR's policy response, four individuals with mid- to street-level management responsibilities, and four VR counselors. Interviews were also conducted with two MU Pre-ETS program employees: the statewide program director and one local-level MU Pre-ETS specialist. Qualitative data were collected over the course of two months.

During the quantitative phase, policy-relevant performance data were collected from the Missouri VR administrative data set. The Missouri VR administrative data set is a rich data set that provides participant-level data encompassing a variety of demographic elements, as well as indicators of programmatic and outcome data. Given the purpose of the study is to assess the impact of an extra-organizational policy implementation response on policy-relevant performance outcomes, the results of both the qualitative and quantitative phases complement each other in important ways. The qualitative results add depth to the study and allow for the identification of important influences of the extra-organizational policy response design on subsequent policy implementation actor behavior, which in turn influenced policy-relevant outcomes and performance that was assessed via quantitative analyses of data from the administrative data set.

## Research Questions

*Overarching Research Question:* How do changes in the policy environment influence organizational structure and subsequent policy-relevant performance?

*Sub-questions:*

- 1) What factors explain Missouri VR's structural response?
- 2) How did Missouri VR's structural response affect policy-relevant performance?

## Participants and Settings

*Qualitative Data Participants and Settings*

Eleven Missouri VR employees participated in individual semi-structured interviews:

- Three high-level organizational decision-makers
- Two regional managers, each responsible for multiple district offices
- Two district supervisors, each responsible for one district office
- Four VR counselors, each representing different district offices

Two University of Missouri Pre-ETS employees were also interviewed:

- The director of the statewide program
- One Pre-ETS specialist responsible for a specific geographic region

Interviews were conducted for the purpose of collectively answering the first research sub-question listed above: *What factors explain Missouri VR's structural response?* Purposive sampling was used to invite participants. Participants were identified based on their role, tenure, and geography. All Missouri VR interviewees

were employed in their current roles prior to the passage of WIOA (July 2014) and maintained the same job title and responsibility at the time of the interviews. The two MU Pre-ETS program employees were a part of the initial MU Pre-ETS staff when the program was developed in 2015 and maintained the same job title and responsibility at the time of the interviews. Additionally, participants were included based on geography in an attempt to gather diverse perspectives from across the state. Different question sets were designed for each group of interviewees (See Appendices E and F for interview questions). Interviews were conducted via WebEx computer software with video cameras on. Interviews were recorded and audio transcriptions were exported for analysis.

#### *Quantitative Data Participants and Settings*

Missouri VR's administrative data set was used to answer the second research sub-question listed above, *How did Missouri VR's structural response affect policy-relevant performance?* The sample included 32,761 unique participants. Sample participants were Missouri high school students with disabilities, who, while enrolled in high school, received VR services as either a potentially eligible participant (PE) or received services as a traditional vocational rehabilitation participant (VR) between July 1, 2013 and June 30, 2020 (See Appendix G for a detailed description of the data set construction). Quantitative analyses were conducted using Stata software package version 14.2.

## **Procedures**

### *Qualitative Participant Identification and Recruitment*

After identifying the preferred individuals to be interviewed, the researcher personally contacted each individual via email inviting them to participate. The researcher informed prospective participants of the purpose of the study, that their participation would be valuable, and described why they were selected (see Appendix C for email invitation). The researcher contacted three high-level Missouri VR organizational decision-makers, two regional managers who were each responsible for managing multiple district offices, two district supervisors who were each responsible for managing one district office, four VR counselors each representing different district offices, the director of the statewide pre-employment transition service program delivered by the University of Missouri, and three MU Pre-ETS specialists responsible for a specific geographic region. All contacted individuals responded and agreed to participate with the exception of two MU Pre-ETS specialists. Both of these declining individuals responded to the initial request with interest, but after additional consideration they indicated that would not be able to make the interview fit into their schedule in a timely manner.

### *Conducting the Interviews*

Due to ongoing concerns over in-person meetings as a result of the COVID-19 pandemic, all participants agreed to participate in interviews via WebEx videoconferencing software. Video cameras were on and WebEx software transcription was used to document each conversation. Since interviews involved only one person at

a time, each camera (the researcher's and the participant's) were centered and focused on each individual allowing for clear video and audio information to be captured. The initial few minutes of the meeting were utilized by the researcher to welcome the participant, remind them of the general purpose of the interviews, address any questions that they might still have, and attempt to ensure that each participant was comfortable before asking questions. The bulk of the interview time consisted of questions from the semi-structured interview protocol (See Appendix E for the interview protocol used for the VR staff and Appendix F for the MU Pre-ETS staff). The interview questions were developed with intentions of exploring factors associated with the development of Missouri VR's structural response to the policy change and to elicit responses associated with previously unavailable data related to experiences of the earliest days of the policy response through the present-day post-implementation time period. The researcher did not start the recording until beginning the actual interview question protocol. WebEx software includes a red indicator on the screen informing all participants when the session recording has started and ended. The researcher informed each participant when recording was about to begin and end. At the conclusion of the interview protocol, the researcher closed with offering an opportunity to answer any questions and an expression of gratitude for the interviewee's participation. Each interview lasted between approximately 45 and 90 minutes. Following the interview, all recordings were downloaded from the WebEx server and uploaded onto the researcher's personal University-issued, password protected, cloud storage account.

## **Data Sources and Instruments**

### *Quantitative Data Source*

The researcher used the Missouri VR administrative data set to conduct quantitative analyses (See Appendix G for a detailed description of the data set construction). The Missouri VR data set was produced from participant level data being entered into the case management system via field staff as they served VR participants. The data elements made available by the case management system are defined per RSA policy directives, 12-05, 13-05, 14-01, and 16-04, which encompass the full time period during which the current study took place. As an employee of the Missouri VR organization, the researcher was able to securely access the data set and export only those data elements that were pertinent to the study and the research questions into an Excel spreadsheet. The spreadsheet was stored on the researcher's employer-issued laptop to ensure security of the data.

## **Data Analysis**

### *Qualitative Data Analysis*

Qualitative interview data were collected in order to address the first research sub-question: *What factors explain Missouri VR's structural response?* The interview transcriptions were downloaded from the WebEx software into a Microsoft Word document to allow for convenient formatting of the text. The researcher analyzed the qualitative data using a free-coding approach in order to identify key themes associated with responses to each question across participants. Themes were used to organize interviewee responses as viewed through the lens of contingency theory. Direct quotes

associated with identified themes were selected for inclusion in the analysis based on their relevance to, and ability to address, the research questions.

### *Quantitative Data Analysis*

Participant-level data derived from the administrative data set was used to address the second research sub-question; *how did Missouri VR's structural response affect policy-relevant performance?* The ability to draw statistical inferences when comparing participants who participated in different types of VR services at different points in time across the sample period is critical to address the research question and sub-question. As such, three estimation strategies will be used. First, means of the groups will be compared in order to draw inferences based on the practical significance of any differences that might exist, and t-test will be used to test the statistical significance between groups in an effort to ascertain the degree to which any observed differences resulted by chance. Second, interrupted times series analyses were conducted to test the degree to which the introduction of the policy intervention, as designed by Missouri VR, disrupted pre-existing VR participant service patterns. Ordinary least squares modeling was used to estimate the differences between the slope of the pre-intervention as compared to the post-intervention trend. Specifically, three models were fit to test the impact of the policy-intervention response on VR participant participation:

Model (1): *Number of new high school student VR cases opened per month* =  $\beta_0 + \beta_1(\_t) + \beta_2(\_x26) + \beta_3(\_x26\_t) + \beta_4(\text{summer}) + \mu$

Model (2): *Number of IPEs developed per month* =  $\beta_0 + \beta_1(\_t) + \beta_2(\_x26) + \beta_3(\_x26\_t) + \beta_4(\text{fall}) + \mu$

Model (3): *Number of non-SWE IPEs developed per month* =  $\beta_0 + \beta_1(\_t) + \beta_2(\_x26) + \beta_3(\_x26\_t) + \beta_4(\text{fall}) + \mu$

Table 9 describes the dependent and independent variables used in model (1), model (2), and model (3). A fall and summer dummy variable were included to increase the precision of the coefficients as the summer months typically involve a small number of new cases being opened due to students not being in school and therefore not readily as accessible to VR staff.



*Table 9: Description of Dependent and Independent Variables Used in Models (1-3)*

Variable	Coding Description
<u>Dependent Variables</u>	
New high school student VR cases opened per month	Discrete variable case count
Number of IPEs developed per month	Discrete variable case count
Number of non-SWE IPEs developed per month	Discrete variable case count
<u>Independent Variables</u>	
_t	month/year code 1-80, 1= July 2013 and 80 = February
2020	
_x26	post-intervention period dummy
_x26_t	interaction of x_26 and _t
summer	1 if month is June, July, or August; 0 if any other month
fall	1 if month is Sept., Oct., or Nov.; 0 if any other month

Lastly, ordinary least squares regression models were used in order to estimate the magnitude and direction of the relationship between key high school demographic characteristics and service participation rates at each of Missouri’s public and charter high schools. By examining zero-order and full models, the researcher was able to develop an understanding of the nature of the relationship between key high school characteristics and participation rates at each high school, and how they changed over time.

Specifically, ten models were fit to estimate the relationship between two different dependent variables and key independent variables:

$$\text{Model (4): } \%PE = \beta_0 + \beta_1(\%White) + \mu$$

$$\text{Model (5): } \%PE = \beta_0 + \beta_1(\text{Median Income}) + \mu$$

$$\text{Model (6): } \%PE = \beta_0 + \beta_1^j + \mu$$

$$\text{Model (7): } \%PE = \beta_0 + \beta_1^k + \mu$$

$$\text{Model (8): } \%PE = \beta_0 + \beta_1(\%White) + \beta_2(\text{Median Income}) + \beta_3^j + \beta_4^k + \mu$$

$$\text{Model (9): } \%VR = \beta_0 + \beta_1(\%White) + \mu$$

$$\text{Model (10): } \%VR = \beta_0 + \beta_1(\text{Median Income}) + \mu$$

$$\text{Model (11): } \%VR = \beta_0 + \beta_1^j + \mu$$

$$\text{Model (12): } \%VR = \beta_0 + \beta_1^k + \mu$$

$$\text{Model (13): } \%VR = \beta_0 + \beta_1(\%White) + \beta_2(\text{Median Income}) + \beta_3^j + \beta_4^k + \mu$$

*Note: j = dummy variables for high school enrollment quintiles. k = dummy variables for the VR district office.*

Table 10 describes the variables included in the models (4-13).

*Table 10. Description of Dependent and Independent Variables Used in Models (4-13)*

Variable	Coding Description
<u>Dependent Variable</u>	
% PE	number of open PE cases divided by the total student enrollment at a high school
% VR	number of open VR eligible cases divided by the total student enrollment at a high school
<u>Independent Variables</u>	
% White	% of residents who are white within the high school building zip code
Median Income	median household income within the high school building zip code
VR D.O.	VR District Office assigned to serve high school; 22 dummy variables for 23 districts; 1=high school is assigned; 0 = high school is not assigned
Q1-Q5	High school student enrollment quintile; 4 dummy variables for 5 quintiles; 1 = high school enrollment falls within the quintile; 0 = high school enrollment does not fall within the quintile

## Chapter IV

### Qualitative Results

A key aspect of this study is to better understand how government organizations respond to significant policy change, specifically to understand how policy change affects changes in organizational structure. Missouri VR's pre-employment transition services implementation experience serves as the case in study, which provides the opportunity to answer the overarching research question: *How can changes in the policy environment influence organizational structure and policy-relevant performance?* The qualitative results described in this chapter were used to answer the first research sub-question: *What factors explain Missouri VR's structural response?* Specifically, the results will be used to describe, through the lens of contingency theory, why Missouri VR's program designers and key decision-makers elected to respond to the change in the policy environment in the manner that they did. Additionally, qualitative data derived from interviews with key program implementers will be used to explain how Missouri VR's extra-organizational policy response was adapted and implemented at the local level.

Interviews were conducted with Missouri VR staff operating within three different levels of the organization: program designers, regional and local managers, and local counselors. Decisions made at the "top" of the organization flow from the director through program designers (senior leaders and subject matter experts) down to the regional and local managers, and ultimately to the counselors. Missouri VR's program designers were responsible for the development of the organization's policy

response. The manager's job was to manage the implementation of the policy response by directing their direct reports in a manner that balanced the needs and demands of the organization with those of the local district offices that they led. Lastly, the counselors were required to adhere to the new expectations from upper level leaders and their managers, while seeking to maintain a degree of balance with their (pre)existing workload. Additionally, in order to gain the perspective of the primary third-party service provider representing Missouri VR's extra-organizational structural response, results include interviews with two employees of the University of Missouri's Pre-employment Transition Services program: the statewide director and one local level MU Pre-ETS specialist who directly provided services to potentially eligible high school students. Names of interview participants have been changed to protect anonymity. The remainder of the chapter will report results of the interviews with those responsible for developing the policy response, followed by the results of interviews with those responsible for its implementation.

### **Factors Contributing to the Policy Response**

As described in Chapter I, Missouri VR developed a largely extra-organizational response to implementing the new policy mandates of WIOA. The design of this response required the addition of new organizational structures to accomplish the policy goals in the form of new programs and services to be delivered by third party providers. The interview results presented in this section will focus on the responses of those Missouri VR staff responsible for developing the policy response. By focusing on interviews with these program designers, the results presented will offer detailed

insights into the factors that motivated Missouri VR's selected response to the policy change. An important aspect of the interviews was to ask Missouri VR's program designers to recall the conversations and within-organization considerations that occurred in 2014 and 2015 that ultimately led to the development of the organization's extra-organizational programs designed to provide pre-employment transition services and to serve potentially eligible students with disabilities. (See Appendices E and F for the interview protocols and questions). Two primary themes emerged from the interviews with the program designers: *uncertainty about how to achieve the expectations of the policy mandate* and *the use of discretion to protect the existing infrastructure of the organization*. The following two sections will present interview data in the form of direct quotes from Missouri VR's program designers, which offer support for both of the themes identified by the researcher.

#### *Uncertainty About How to Achieve the Expectations of the Policy Mandate*

While WIOA and its requirements became effective upon being signed into law, the corresponding final implementation regulations would not be published for more than two years. All VR organizations were faced with decisions regarding when and how to begin developing their organizational response to the significant policy change associated with making the five required pre-employment transition services available to all potentially eligible students with disabilities. In describing some of the earliest policy response conversations within Missouri VR, Program Designer Thomas stated,

*"It was a time that, you know, we were really wondering how in the world we were going to provide those services. Not only to students with disabilities in all the schools, but the potentially eligible students as well, because that was all new. We've never, ever had a situation where we were to provide services to*

*potentially eligible individuals. There weren't any instructions when the President signed the bill on July 22<sup>nd</sup> [2014] and we were supposed to start doing this. You know there were so many things that we didn't know. We didn't have any regs. We really didn't have any direction, didn't have any policy directives or anything."*

Program Designer Kathleen stated,

*"I recall a lot of those conversations and a lot of uncertainty about how we were going to make this work. We didn't have time. It was basically you've got to spend this 15% starting now. This has to be accounted for and people started to look within the structures of our own states to figure out how to spend that."*

Addressing the same early challenges and speaking to the degree of uncertainty that existed, Program Designer Richard recalled,

*"The delivery of services was the mandate. That was one of the gifts really, because RSA was trying to figure it out too. And the only thing that everybody was sure of is that you had to do it immediately. It was a mandate that was upon everyone. But I think RSA was cautious because they didn't know how to do it. This was something that required some interpretation and I think they sort of purposely left it up to some states to start doing some stuff with it. If it had been designed outside of us, we would have probably been limited in some ways by our interpretation of the design."*

Given the degree of uncertainty that existed regarding when and how to respond, Missouri VR's program designers described their recollection of Missouri VR's goals of the yet-to-be developed policy response. Interview responses elaborated on expectations that program designers had for the impact of the programs they designed. Their responses illustrate a combination of aligning their perceptions of the overall policy expectations with their own personal expectations.

Richard stated,

*“I think the goal, I think the federal goal was well, is to help kids better understand what the opportunities look like as they finish high school and to make those as productive as they can be for kids. I think what the law was really driving at which is providing more services to more kids, maybe a little sooner than we had been traditionally. And particularly kids with disabilities, because those are often the kids that have the fewest opportunities. We tried to make sure that what we put in place had a flavor that wasn’t this is the mandate to us, the flavor of it was, this is an opportunity that’s come to us and we’re really wanting to make it the best opportunity that we can.”*

Richard added,

*“I think the hope and expectation was that what we did would help kids know more about work. I think that disability can become a real barrier to opportunity, and I think that the fact that we do this, remove those barriers and I think that the way kids think about themselves changes if they have good quality services from this program. I think that young people today are cheated out of knowing the value of work. Kids with disabilities even more so because they are not often given the opportunities that kids who don’t have disabilities are given. If we can prepare them for some of the things that just go into getting a job and keeping a job, we’ve done them a good service.”*

Kathleen stated,

*“We began to develop a plan to provide the service to as many students as possible. I think one of the things we thought we would see is students who would come to us better prepared to enter the workforce. Students who would have at least had an introduction to soft skills and expected employer expectations who might have an identified vocational goal because they’ve been doing career exploration. Students who would be able to self-identify what their disability was and their accommodation needs. I think those are the things we anticipated, along with perhaps an increase in referrals. I think we thought there are also might be students who did not even apply because they didn’t need us. They figure out, you know, if their goal wasn’t college or if it wasn’t you know to get assistance with finding a job they may have gained the skills through pre-ets to do that on their own so I can remember those conversations and kind of some reminders to ourselves at the time that you know if students don’t apply that we had cases on previously it might not necessarily be a reflection of performance, you know from an open VR case perspective, but rather a reflection of the fact that they got what they needed. I think one other thing we thought about at the time too was that we have a number of students with more significant support*



*needs who often ended up , you know, on the couch at home or you know very early on in their high school career, having been pigeonholed for sheltered employment and I think I remember some of the other discussions were if we are able to get to them, provide those pre-ets services early on then we might be able to begin to educate them and their families about the potential for competitive integrated employment. I feel like the fact that we're providing more services earlier is exactly what the law intended."*

Thomas added,

*"The main goal was to provide the student with a work experience in a competitive integrated employment setting. And so that was the primary outcome goal. It was not necessarily to provide them a competitive employment outcome. And provide them opportunities to learn soft skills. The whole goal is to provide them with experiences to be successful in their careers, right? Working with the [MU] pre-ets specialists, working with the CRPs [Community Rehabilitation Programs], getting those experiences in the work setting, the experience in the independent living centers, all of those experiences have been life changing, and the fact that the significant majority of these students have never worked before."*

In the face of uncertainty, Missouri VR's program designers each described pride in taking a proactive approach to designing the policy response. These comments come with the luxury of hindsight, but represent an important aspect of the Missouri response, as in the earliest days post-WIOA, not only deciding *how*, but, in the absence of clear guidance, *if* to act were some of the most challenging decisions the nation's VR organizations were faced with.

Describing Missouri's proactive approach, Kathleen stated,

*"Missouri, we did something different than probably everybody else, at least initially. We felt like this is not perfect. We knew all along it wasn't perfect. But at least it was a step in the right direction and there was an openness and willingness to modify the model where it wasn't working and to make it closer and closer to right. I think people didn't run in fear like sometimes in other states. If it makes sense and we've communicated well with our partners, and we've developed what sounds to be a good plan then let's do it. And if it's good for the*

*clients, it seems defensible, you know and if something needs to be changed, we'll modify it to make it better, knowing that we can always improve. We only knew what we knew at the time. No one else knew how to do it any better than we did, right? We're the type of organization that has a philosophy of making modification or improvements. We continuously evaluate our services and the way that we provide them."*

Thomas recalled,

*"We did a lot of brainstorming back then to come up with some ideas. Once somebody has an idea and throws it out on the table, you get other input and you keep talking about it and before long it's a very good idea. With pre-employment transition, I mean we basically had to start from scratch. You know with what we were presented on July 22<sup>nd</sup> 2014, with having to come up with a way that we could provide pre-employment transition services to all students with disabilities that needed those services in Missouri. We didn't have any instructions."*

Thomas added,

*"I'm proud of the way that we took the bull by the horns. I mean some of the state VR agencies didn't want to do anything until the regs came out, but that's not what Missouri VR did. We were thinking of the client first, the student first and to get those services out. If we were doing them wrong in the eyes of RSA, so be it, we make some adjustments and move forward."*

Richard discussed how even in the early days of the new partnership that was developed with the University of Missouri, the work was still being developed and understood,

*"It was developed basically by the people who did it. It was kind of do something and then see how it goes and so we entered into it all by guesswork. Guessing how much money we needed to spend and how we can make it happen."*

#### *The Use of Discretion to Protect the Existing Infrastructure of the Organization*

Once decisions were made to move forward and the conversations shifted toward the development of a specific programmatic response, each of the three

program designers spoke to the importance of developing policy response strategies that sought to minimize the impact of the policy response, whatever it may be, on the existing organizational infrastructure. Primary amongst these concerns was to avoid overloading already busy VR counselors with new work. Counselors were perceived as being very busy already in that they not only had expectations to serve students in each of Missouri's public and charter high schools, but adults as well.

Richard stated,

*"Part of I mean, there were several things we talked about, but a big part was just how much load this could be on counselors, that we just didn't see how this could be added. Counselors were just already overloaded. So how do you accommodate this with counselors? And we also knew that we didn't have the luxury of adding additional people, the legislature would be a challenge to get through. So, it was pretty obvious we were going to have to contract for a lot."*

Richard added, that avoiding a response that overloaded counselors

*"Just drove almost everything that we did then. Part of the imperative was just not to stack more on counselors because that would have either just destroyed the VR program or overloaded counselors, and we'd have lost all of our counselors, right? If we wanted counselors to do that [focus on pre-employment transition service delivery], it would destroy our services, because it would, you know, have channeled their energies there."*

Kathleen mentioned that a major consideration in determining what Missouri VR's ultimate approach would be was,

*"...our staff capacity to take on this additional work. Plus, the number of students and school districts that were potentially going to require support. I can remember us trying to identify exactly how many students this might be because we knew it was between 20,000 and 21,000 aged 16 to 21 who had an IEP alone, not even counting 504 plans or other disabilities".*

Thomas added,

*“Our counselors, you know, have large caseloads. Many of them have caseloads up to you know, well over 150 clients. One particular counselor has over 200 clients and could not absorb all of the required activities and requirements.”*

In response to talking about adding pre-employment transition services responsibilities to counselors, Thomas says,

*“I just think that would have caused some major issues. Everything from morale to poor services. You know you just overload your staff and somebody is going to get shorted.”*

Another sub-theme emerged, which described a drive to protect the existing organizational infrastructure; the desire to protect, to the degree possible, the existing service strategies for high school students that had been in place for years in Missouri. The three program designers talked extensively about how Missouri VR had a pre-existing foundation of success in serving high school students with disabilities from which to build their response. There was a sense of conflict that emerged from their comments, as they believed it was important to protect what had been built in terms of the role of the VR counselor operating within Missouri’s public and charter high schools, while at the same acknowledging that the counselor’s ability to absorb more work was limited.

Kathleen stated,

*“We were way ahead of the curve with transition long before WIOA came along. We knew that counselors were already doing good work. We were getting closures for kids. And it was exciting to think about doing more, but we really didn’t want to impact the good work that we knew was already happening regardless of the mandate to provide pre-ets services.”*

Richard added,

*“The core of what we do is getting people jobs and we can see pre-ets augmenting that, but offsetting that, yeah, that wasn’t a good feeling. You’re not going to get the outcome associated with delivering services to potentially eligible, it is a very different outcome. We were pretty happy with what counselors were doing and we were trying to protect that in some ways. I think that there was a lot of pride in Missouri VR and substantial confidence in the success of the organization and that’s a hard thing to give up.”*

Acknowledging that protecting the established role of the counselor was important, all three program designers also acknowledged how seeking to protect the historical role of the counselors came with some challenges of its own.

Thomas stated,

*“There was a strong desire not to exclude counselors from providing pre-ets services, but not to dump the whole thing in their lap.”*

Kathleen describing her perception of how some counselors felt,

*“So, the counseling and guidance they were doing that mirrored some of what the [MU] specialists now do, they enjoyed that, and I think it was very difficult for them to give some of that stuff up. And nobody told them they had to give it up. It’s just that when you’re looking at the volume, sometimes it makes sense to give it up.” “The role of the counselor has shifted somewhat, not that they can’t do that, not that they shouldn’t and wouldn’t be doing some of that, but what becomes even more incumbent on them is managing interpersonal relationships where they’re at constant communication with a specialist who is providing the services to your students.”*

Richard stated,

*“We already knew that some counselors were engaged in some things that probably apply to this. So that was part of what we wanted to continue.”*

Kathleen added,

*“We had new requirements and things were now more formalized and structured, but it was a lot of things that counselors were already doing. We just didn’t call them “work-based learning experiences”. In a perfect world, I think we probably would have had counselors being able to provide pre-ets when they wanted to and document those actual services. The infrastructure would have been in place for us to really support what we needed, what we were being mandated.”*

A final sub-theme that emerged describing a drive to protect the existing organizational infrastructure from the interview data provided by Missouri VR’s three program designers was the value placed on leveraging partnerships in any subsequently designed policy response. In the early stages of formulating a response, program designers discussed the role that partnerships could play.

Kathleen stated,

*“Missouri, we do a really good job at partnering. We’re good at it. I think that it just has a lot to do with the fact that we have relationships with, nurtured those relationships for many years. That’s been part of our culture here to partner when we can and to support our friends in the profession. Recognizing the strength that we have of partnering, and that our partners have unique expertise that they bring to the table.”*

Kathleen added,

*“What is going to provide the most rich and fulfilling experience for our students? which is part of the reason we included independent living centers, because they provide a unique perspective.”*

Kathleen, referencing community rehabilitation programs,

*“When I think about summer work program, same thing. You know, it was an opportunity for us to give them a chance to help us out and use their expertise, which is working with employers and providing opportunities for employment. Having a realization and understanding that everyone brings something important to the table and sometimes it’s not just the one thing that makes a difference.”*

Richard stated,

*“We knew getting FTEs [full-time employees], I mean all the messages we were getting from that we always get from every governor, I mean we need fewer staff working at the state, so getting more was not in the equation and there just didn’t seem to be a way that we could reallocate staff to accommodate 15% of what we do.”*

Kathleen describing the decision to develop programs in conjunction with external partners,

*“I think we’re very fortunate that we have people on staff who are able to think outside the box and think of ways that reduce the workload on our counselors and at the same time you know, provide the maximum service to the most while spreading out the work.”*

Thomas recalled,

*“One of the things that we tried to do is look at the partnerships that we had at the time. In looking at the community rehabilitation programs, and the independent living center programs, one of the ideas, and I think it was [Richard’s] idea, was to look at the regional professional development center.”*

Given that the MU Pre-ETS program constituted the strong majority of the extra-organizational policy response, it is important to understand how staff responsible for delivering these services conceptualized their role and the goals of the program for which they worked. Interview data revealed insight into some of the earliest conversations regarding the development of the new MU Pre-ETS program. As the program’s statewide director, Rodney’s understanding of the context for the expectations from VR in the earliest days set the stage for a deeper understanding of how he and others working within the MU Pre-ETS program developed and pursued policy-relevant goals. Rodney was involved in the early conversations with VR that

eventually led to the development of MU becoming a partner in Missouri VR's effort to comply with delivery of pre-employment transition services to potentially eligible students with disabilities. Rodney stated,

“[Richard] approached Mark from the regional professional development center and said who would we talk to about this? Mark invited him up to the University. [At that meeting] Mark kind of got a feel for what question you all [Missouri VR] were asking.”

In describing VR's expectations, Rodney shared,

“I never felt like you guys came with a pre-conceived idea, you just came with a problem.”

Rodney recalled that Missouri VR's primary motivation was to establish partnerships to accomplish the policy goals. He stated,

“I know a lot of the motivation was to contract this out. There was no way that counselors can bear the burden and still do all the other things they need to do.”

When asked about the direction that was provided from Missouri VR regarding the delivery of pre-employment transition services in those early days, Rodney stated,

“I never felt like they were telling us what we had to do. I think what they were trying to do was encourage us to innovate. I felt like if they thought I was going off track, they would guide me.”

The extra-organizational perspective provided by Rodney reinforces the role that uncertainty played as Missouri VR addressed its compliance challenges in the early post-WIOA days.

In summary, interview data presented clearly describes the impact of the two primary themes (uncertainty and use of discretion) on Missouri VR's decision-making in



the earliest days of developing an understanding of WIOA and its expectations for providing pre-employment transition services and making them available to potentially eligible students. Missouri VR's leadership and program designers faced a high degree of uncertainty about how and when to respond. With no additional resources, Missouri VR's leaders were forced to look inward, exploring options that made sense to them given the situational context, as well as perhaps take advantage of the perceived flexibility that was afforded them given the relatively uncertain terms provided by the mandate. As suggested by structural contingency theory, this high degree of uncertainty seemed to drive the subsequent decisions and led the program designers to seek a response design that was focused on both complying with the policy mandate and protecting key existing infrastructure that they deemed most important.

### **The Impact of the Selected Response on Program Implementers**

The results provided in this section will offer detailed insights into how the managers, counselors, and third-party providers regarded the new extra-organizational pre-employment transition service strategies. While Missouri VR's managers, counselors, and MU Pre-ETS specialists were not involved in the design of the programmatic response to the policy change, through their interviews they provided a detailed account of how they experienced implementing the new programs, as well as, how they adapted in the sense of embedding the new expectations into their pre-existing workloads. This is an important aspect of the case study, as results reported here will offer insights into possible causal factors associated with performance-related outcomes that result from the organization's policy response. Two themes emerged

from the interview data. First, a general sense of uncertainty regarding how counselors would manage the new expectations, and second the emergence of diverse local implementation strategies.

### *Uncertainty in How to Manage New Expectations*

In much the same way that Missouri VR's program designers were dealing with uncertainty regarding how to respond to the policy mandate at the statewide level, at the local level managers and counselors were dealing with uncertainty in terms of how to assimilate the new expectations cast upon them as a result of the extra-organizational response to the policy change into their pre-existing work. In describing her initial reaction to learning about the pre-employment transition service expectations under WIOA, Manager Julie stated,

*"Oh my god, this is a game changer. This is really going to change some things. And I was, to be honest, kind of nervous about it, because it really changed the landscape of what would be happening. 15% of the budget is going towards transition, and that's a lot. What does that mean for us? How is that going to change the way we deliver services?"*

Manager Tracy's initial reaction focused on the demand to serve thousands of additional students,

*"We used to get the list for each school district of how many students and those lists were huge. I think it did make our eyes bug out to see. How are we going to serve all of those students? And there was that panic of if we were supposed to be doing something for every student."*

Manager Linda shared similar remarks in describing the counselors early understanding of pre-employment transition services,

*“What in the world’s going on? Why do we have to start doing all this data tracking? But up until the point when counselors started tracking time, it didn’t really feel like it was impacting their role as a counselor directly. So, maybe they weren’t doing anything different with how they interacted with the high school student, but now they were tracking it, and that made it real.”*

In describing her initial reaction to the changes, counselor Monica stated,

*“When I first heard about it, I was like, oh, this is exciting because I’ve worked with transition for years. You know, we were kind of limited with the kind of the programs that we could provide. Since we’re primarily adult services, I had quite a few high schools that just don’t have a lot of the services. A lot of the rural schools that just didn’t have any kind of opportunities for students to learn some of those new skills and things. So, I just remember thinking, wow, this is great, but well, how are we gonna do all this?”*

Counselor Michael stated,

*“I was just thinking, well it’s a change in regulation or change in rules and it looks like there’s gonna be a lot more structure to what we are doing. I was going to schools and I was meeting with kids and in that process, it didn’t really change as far as my day-to-day routine, but then I was thinking, gosh how can we do more?”*

Counselor Cheryl stated,

*“How will this all be implemented and work? How does this work with what we’re supposed to do with the clients and in the schools? Wait, what are we doing? How do we do this?”*

Counselor Cynthia shared how it felt early on,

*“Change is both scary and can be exciting. When you’re not sure how that change is going to affect your job or what your role is going to be it can be scary, yes. I would say that the schools were both excited and nervous.”*

### *Diverse Local Response Strategies*

The following section will present interview results from four counselors and one MU Pre-ETS specialist as they describe their experiences assimilating the new expectations, new pre-employment transition services, and new partners into their existing workload. Perhaps not surprisingly, in their responses each counselor chose to focus their response to the questions on the MU Pre-ETS program, which of course represented the bulk of Missouri's response, while three of the four spoke about the VR summer work experience.

Monica discussing the addition of the summer work experience,

*"The summer work itself has been one of the biggest, um, things that have just made such a difference for the students and you know it's benefitted me because the schools can see an outcome and a change in the students. Providing the services before their senior year has been huge because a lot of those teachers didn't have the ability to devote as much time to these students to work on the things that they're working on."*

Monica shared her thoughts on the addition of the MU Pre-ETS program,

*"The opportunity to have that service for the students, because I didn't feel like the minimal amount I was helping was as beneficial as it could be. I was like wow, because that will take a load off of me as a transition counselor."*

Monica referencing her partnership with her MU specialist,

*"Yeah she's amazing. Early on, the challenges were mostly around establishing a working relationship. It's kind of more about that person's style and how they work as opposed to anything to do with pre-ets or MU. She refers them [students] all to me. And honestly, that takes a load off of the schools. So, the schools really like that and they take advantage of that. That's one less thing they have to worry about."*

Monica discussing the value of the MU partnership,

*“You know, as a counselor, if you have all the other cases, I can’t spend a ton of time in the schools. I think if you’re not in there and they’re able to see that you’re making a difference, the schools don’t have much buy-in. It has added to the number of students who we’ve been able to serve.”*

Monica, referencing how the addition of MU has changed how she does her job,

*“It definitely has changed it to some degree. I mean the opportunity to have somebody in there from 9<sup>th</sup> grade on to talk about work has honestly made my job a lot easier. By the time they’re referred to me they’ve had the [initial] conversations. I do think the relationship that I have with schools is much better and so that makes it easier. I think they [schools] weren’t referring me all the people before and they weren’t seeing the value, and now they do, which has created more students and clients coming through. I feel like we’re getting more students, which is what I want.”*

Cheryl also shared her thoughts on the summer work experience,

*“I thought it was a really good idea because what we were hearing from employers was that a lot of the kids were not having enough experience. I think the programs are good because, I think the more we talk about, at an early age about, you know vocations and employment and looking towards the future, the better it is because it doesn’t become such a surprise when we’re really trying to hone in and help them. I don’t think it’s changed much how we do the job when we got summer work thrown in there, although it increased the workload quite a bit, because we had to open the case.”*

Cheryl discussed her initial questions and confusion on the introduction of the MU Pre-ETS program and Pre-ETS specialists at the local level,

*“How do we coordinate these things? Do we coordinate? Are we supposed to work with them?”*

Cheryl stated that one of the biggest changes for her was the additional paperwork,

*“We have more paperwork that we have to do. Now we have to try and coordinate it with the new person as well as the [high school] work experience coordinator, it’s just a lot extra. The parents are getting bombarded and the teachers are getting bombarded. Yeah, more processes, and with that comes less time to be able to spend with clients in general.”*

Cheryl shared some of her struggles with incorporating a new service partner,

*“In the very beginning of this it was a really big struggle to have any type of partnership with them [MU Pre-ETS specialists]. I have an individual that I work with now that is much more receptive. But, as far as doing the transition planning tool and stuff like that, I still don’t get names. I rely more on the [high school] work experience coordinators for that. I’ve got a couple of days of general intake here and then I also have like five sites and so its coordinating all of those different things. So, it’s really hard to kind of coordinate and even be there at the same time.”*

Cheryl mentioned that she didn’t feel the addition of the MU program changed how she did her job,

*“No, it didn’t”,* she responded when asked.

Cheryl also commented on the impact of the MU Pre-ETS program on her caseload,

*“I don’t think it’s made a difference with the schools that I’m working with. Yeah, I don’t think they’ve [referrals] increased or decreased in any way.”*

Cynthia, discussing the summer work program,

*“I was excited because I like seeing people get their first job. I was excited that it did open some opportunities for some kids. Transition counselors tend to have a lot of college students which makes us very busy in December, and then all of a sudden, we also got really busy with all these summer students, so we were also busy at the end of the school year with college and high school students. I learned how to adjust, but I’m not denying that I noticed a change. It’s not like they weren’t going to be my clients anyway. It was just a matter of when, it changed the timelines.”*

Cynthia discussing the overall impact of summer work,

*“It has helped us do what we were supposed to do, helps the kids transition to the next level. Schools wanted it, but I think parents wanted someone to come in earlier than we could. I think the best thing that came out of all of this, is the summer work program. It helped me get to know the students in a way that I wouldn’t have before.”*

Cynthia talking about the addition of the MU Pre-ETS program,

*“Some of those pre-ets services were provided by us directly, and quite frankly I was already doing some of that stuff and we just weren’t documenting it. Having another player come in, um, it’s good that we have other supports, it also adds a little complexity.”*

Cynthia discussing the addition of the MU Pre-ETS specialists,

*“The team got bigger, there was more coordination. For some people [other VR counselors] it helped get the word out there, but my school districts had no problem, so I don’t know if I really needed that. If you get a good [MU] pre-ets person, it definitely adds value to the transition process.”*

Cynthia, discussing whether she has noticed a difference in terms of the number of new high school student referrals,

*“I have to say no, and I think I know the reason. My relationship is with the gatekeeper at the schools. The schools, quite honestly put us first, because they know that we can pay for college and for job placement services. So, if they’re limited on time, they’re going to choose us.”*

Counselor Michael shared his thoughts on the addition of the MU Pre-ETS specialists,

*“It’s almost like a second team, you know. I like having them there because they really can get a picture of sophomores and juniors before we even get there. She’ll introduce me to them and say, okay this is Matthew. You may be talking with him later on senior year.”*

He also discussed some of the communication challenges associated with having a new external partner.

*“So, she starts going in marketing the summer work program to the schools and hasn’t really talked to me. It’s almost like, whoa, wait a second, I know that you’re gung ho and want to do this, but you and I should probably sit and you know hash this out first, because I don’t want them to get all excited about this and then realize there’s a transportation issue. What’s an issue is that we’re the ones that decide if this person is eligible and don’t tell them they’re eligible.”*

Counselor Michael acknowledged challenges of working through role clarity when he stated,

*“Hey they’re just wanting to help, and I don’t know whether, like I don’t know that relationship. I don’t like to cause waves for no reason, like to say, hey [Linda], you really ought to wait. Is that my role? It’s not even a part of what I do like, you know, she comes and goes and we just see each other and we talk occasionally and not formally and not on a regular basis.”*

Much like the VR counselors, MU Pre-ETS specialist Ashley was not in a position to be involved directly in guiding the development of the new program, but as an original MU Pre-ETS specialist she was also in a position where she was forced to integrate new service delivery strategies into the existing operational practices of Missouri VR and its local VR counselor and associated high schools. Ashley’s perspective is particularly interesting as she has no pre-existing knowledge of, or relationship with the established VR practices. Ashley describing her concept of her role and the role of the program in the earliest days,

*“I knew that our focus was on employment and kids with disabilities. I felt like we were almost the glue that could seep into the cracks where people didn’t have time to meet the needs of those kids. We were more of a catchall to be able to move kids toward employment. I was uncomfortable at first, to have a job where the boundaries were not clearly defined. I think it was probably two or three years in before I felt like I can exactly say what we do and then deliver on it.”*



Ashley describing her recollection of any expectations being communicated from VR,

“There was focus on goals from the beginning, but it wasn’t synonymous with quotas. I remember it had a lot to do with meeting as many kids as you could, trying to be in as many schools as you could. The goal was also quality relationships and constantly gaining greater relationships with more schools. We needed to have strong relationships with people so that they will trust you and give you more students.”

Ashley also experienced some initial challenges with integrating aspects of the new MU Pre-ETS program with the existing local VR service delivery structures and processes.

Ashley described her relationship with the local VR counselors in her territory,

“I did feel some confusion and competition between us and the counselors early on. It was a very strange thing to navigate. I just have so much empathy for the VR counselor. It wasn’t sprung on them because they were not doing a good job, but it may have felt like a critique of their work that we were suddenly coming in. And I think we were feeling pretty big about ourselves at the beginning. It can feel like we’re parallel in a lot of ways, but we’re structured so differently and we just look so different that we’re really not parallel. I’m fortunate in that me and my counselors all have just a huge focus on relationships and the same kind of core values. Like five or six years in we have a good working relationship. I didn’t understand how much I needed to work on establishing those relationships early on. It almost would have been nice to have them involved sooner. And I wonder if we could have done them more good sooner. If we had understood more of our partnership as opposed to our differences.”

In summary, interview results with managers, counselors, and one MU Pre-ETS specialist describe how initially local level staff were uncertain as to how these new programs would be implemented and assimilated, as well as how it might change the nature of the work done by counselors at the local level. In describing the experiences of adding new services and programs, specifically the summer work experience and the MU Pre-ETS program, we see a mixed bag of reports. It seems that the summer work experience provided VR counselors the opportunity to be directly involved in the

delivery of pre-employment transition services, which was well received by counselors, but it came at a cost of more work (eligibility paperwork) due to the requirement that the student be VR eligible. Additionally, the interview results suggest that there seems to be variation in the role of the VR counselor in how the services being delivered by the MU Pre-ETS specialists are implemented. Two of the counselors described scenarios wherein they have strong working relationships with their associated MU Pre-ETS specialist, while the other two described a situation wherein they essentially are aware of the presence of the local MU Pre-ETS Specialist in their assigned high schools but have little direct interaction and thus a weak working relationship. Lastly, MU Pre-ETS specialist Anna describes the challenges and successes of the MU Pre-ETS specialist working to establish and maintain relationships both with the local high schools and the VR counselors. Similar to the program designers, results of this section point to program implementers at the local level experiencing an initial high degree of uncertainty which seems to have created conditions for resultant discretionary implementation practices by counselors and third-party providers to emerge.

## **Chapter Summary**

The results presented in Chapter IV provide a detailed account of Missouri VR's programmatic response to the policy changes mandated by WIOA as recalled by key organizational actors. Results describe an initial high degree of uncertainty on the part of the program designers in terms of how to comply. This uncertainty created an opportunity for discretion among Missouri VR's decision-makers to decide how they

would balance compliance with the policy mandate while protecting key aspects of the organization that they deemed most important. As suggested by structural contingency theory, the result was the development of the largely extra-organizational structural response, described in Chapter I, which was designed to make available the five required pre-employment transition services and serve the state's potentially eligible students all while attempting to minimize counselor overload, leverage existing partnerships, and build on past successes. Interview with staff operating at the local level describe a period of uncertainty, in the sense that initially it was unclear to staff how these new programs and services would be assimilated into their existing workload and local practices, even if they were designed to be delivered by a third party. Some of the successes and challenges that were described by those interviewed point to local level staff having a high degree of autonomy in how they chose to assimilate these programs into their work. This autonomy seems to have contributed to the establishment of variation in local practices early on which seem to have persisted over the course of the years following WIOA's enactment. All in all, interview results provide a substantial level of insight into the factors that motivated Missouri VR's structural response to the policy change and deepen the understanding of how the designed response was received and implemented locally. Moving into Chapter V, we will have an opportunity to explore the impact of these decisions and subsequent extra-organizational structural response on important policy-relevant performance outcomes associated with serving high school students with disabilities in Missouri.

## Chapter V

### Quantitative Results

Beyond understanding why Missouri VR responded in the way that it did, a second key aspect of this study was to assess the impact of the extra-organizational policy response on policy-relevant performance. Results of this chapter will be used to address the overarching research question: *How do changes in the policy environment influence organizational structure and policy-relevant performance?* More specifically, the results of analyses presented in this chapter will seek to address the second research sub-question: *How did Missouri VR's response affect policy-relevant performance?*

According to Donaldson (2001), "in order to be effective, the organization needs to fit its structure to the contingency factors of the organization and thus to the environment." (page 23) As described previously, significant and abrupt policy changes served as the primary contingency factor motivating the development of Missouri VR's extra-organizational structural response. Whereas Chapter IV reported results describing the factors that motivated the development and implementation of Missouri VR's structural response, Chapter V relies on administrative data to describe the effects of the response on policy-relevant performance. This approach allows for the development of a more complete understanding of the influence of the policy change on the structure of Missouri VR, and in turn how those structural changes affected policy-relevant performance. While WIOA mandated relatively broad and simple

measures of expected performance (for VR agencies to spend 15% of their federal grant on pre-employment transition services and to make the five required pre-employment transition services available to all potentially eligible students in the state), a much deeper analysis of performance is warranted if we are to truly understand the impact of the policy as implemented by Missouri VR on those it is intended to benefit. Specifically, for the purposes of this study, additional measures of policy-relevant performance (beyond those stated by WIOA) were developed by the researcher and defined as follows: 1) changes in statewide high school student access to, and receipt of, VR services prior to and after the introduction of the policy response; 2) the degree to which potentially eligible students later became VR eligible participants; and 3) changes in the demographic and local high school characteristics of high school students receiving VR services prior to and after the introduction of the policy response. These additional measures of policy-relevant performance were borne out of the researcher's knowledge of key aspects of the VR service delivery system which can impact how high school students with disabilities experience VR services. In line with these descriptions of policy-relevant performance, analyses were conducted by answering the following seven questions, which, following an initial description of the sample, will serve as an outline for the remainder of this chapter:

- 1) Did more potentially eligible and VR eligible high school students access VR services after the introduction of Missouri VR's policy response?
- 2) Did the introduction of the policy response disrupt patterns in how high school student access VR eligible services?

- 3) How often did a potentially eligible student subsequently apply to receive VR eligible services?
- 4) What are the demographic characteristics of the potentially eligible students, and how do they differ from the VR eligible students?
- 5) How do the demographic characteristics of the VR eligible students change following the introduction of Missouri VR's policy response?
- 6) How do local factors associated with Missouri's public and charter high schools influence access to VR services for potentially eligible high school students with disabilities?
- 7) How do local factors associated with Missouri's public and charter high schools influence access to VR eligible services for high school students with disabilities?

### **Sample Description**

As described in Chapter III, the sample included 32,761 unique participants. Sample participants were Missouri high school students with a disability, who, while enrolled in high school, received VR services as potentially eligible students (PE case) or VR eligible students (VR case) on or after, July 1, 2013 through June 30, 2020. A case represents a particular instance or situation wherein an individual engages with a VR service provider for the purpose of receiving a specific service or combination of services. While no one participant can have multiple cases simultaneously, there is no

limit to the number of cases of either type (PE or VR) that a participant can have.<sup>1</sup> Given that 95% of all participants included in the sample had only one case, no adjustments to the sample were made to account for participants with multiple cases. With such a small number of participants having more than one case, results will not be sensitive to participants having multiple cases. While participant-level data for VR eligible students provides a large number of personal demographic characteristics within the administrative data set, participant-level demographic data were limited to age, gender, and race/ethnicity for potentially eligible student participants. The average age of participants included in the sample was 17.03 years, while 62% of the sample participants were male, with 81% being white and 18% black.

As can be seen in table 11, most participant cases included in the sample were VR cases (57%), followed by PE cases (39%), with the remaining 4% of participants having an initial PE case followed by a VR case within the sample time period.

*Table 11: Summary of Unique Participants by Case Type*

Case Type	Total Unique Participants	Percentage of Total
VR	18,616	57%
PE	12,882	39%
PEVR	1,263	4%
Total	32,761	100%

*Note: Participants who had multiple VR and/or PE cases are counted as a single participant. VR = vocational rehabilitation eligible case, PE = potentially eligible case, PEVR = participant with a PE case followed by a subsequent VR case.*

<sup>1</sup> 1,680 participants in the sample had multiple cases of any type (PE or VR), representing 5% of the total sample. Of those participants with multiple cases of the same case type, 1 participant had 2 PE cases, 377 participants had 2 VR cases, 11 participants had 3 VR cases, and 1 participant had 4 VR cases. 1,263 participants had an initial PE case and a subsequent VR case within the sample time period.

## **Impact of Policy Response on Policy-Relevant Performance**

*Did more potentially eligible and VR eligible high school students access VR services after the introduction of Missouri VR's policy response?*

Figure 14 provides a count of the total number of new participant cases, broken down by case type and separated by the year that the case was opened. The year was defined in alignment with the VR program year, which runs from July 1<sup>st</sup> through June 30<sup>th</sup>. As such, the year 2013 represents cases opened July 1, 2013 through June 30, 2014, with each subsequent year following the same convention through 2019. It is important to note that 2016 and 2017 were transition years from a data reporting perspective. Nationally, VR agencies moved from a federal fiscal year reporting cycle, in which only closed cases were reported, to a quarterly reporting cycle, wherein participant-level data on all cases served during each quarter were reported. While this change in data reporting practices technically should not impact how data in this sample were tabulated, it did create a potential for data coding discrepancies to emerge and influence the results presented.

Several interesting observations can be seen in figure 14. First, we see a slow but steady increase in new VR cases during the first three years (2013-2015), followed by a significant reduction in 2016, a modest year-over-year increase in new VR cases in 2017, and then a downward trend in years 2018 and 2019. Of note regarding program year 2019 is that data for this year included data on VR cases that were opened through June 30, 2020. The months of March through June, 2020 coincide with the beginning of the COVID-19 pandemic, wherein new referrals decreased significantly across all Missouri

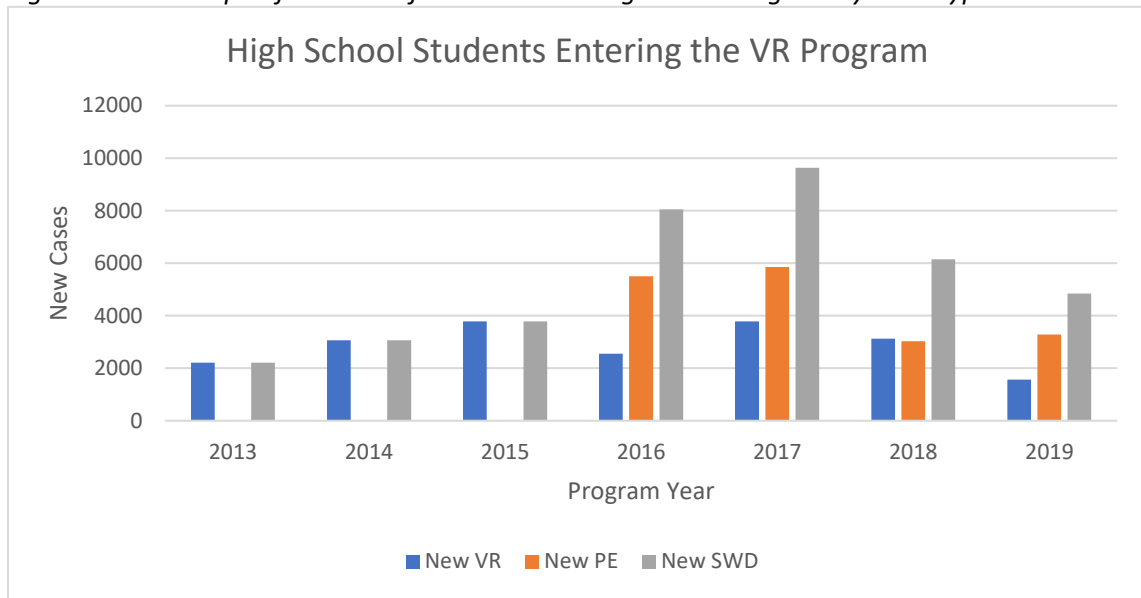


VR programs. Additionally, although only two years of data existed prior to the onset of Missouri VR's policy response in 2015, new VR case data seemed to experience changes in pattern beginning in 2016, potentially indicating an impact of the policy response. In terms of new PE cases, as mentioned previously, potentially eligible students began receiving services in 2015, but no statewide data counts were available until 2016.

Looking at patterns and trends beginning in 2016, we see a significant drop off from the second year that PE case type totals were collected (2017) to year three (2018). This change is likely the natural result of the new extra-organizational programs designed to serve the potentially eligible students running out of new students to serve following their initial program ramp up period. With 2018 representing the fourth year that potentially eligible services were made available to high school students across Missouri, the potentially eligible service providers had likely already established referral patterns that reached the majority of underclassmen at the schools that they served.

Additionally, as with the VR cases, the year 2019, which runs through the end of June 2020, was impacted by the COVID-19 pandemic. Lastly, we see that the total number of students who received some type of VR service, even at the lowest level once PE case data were available (4,749 student participants in program year 2019) remained much higher than the highest year prior to the PE case data being collected (3,705 student participants in 2015).

Figure 14: Bar Graph of Number of Students Entering the VR Program by Case Type



Note: New VR = new VR cases, New PE = new PE cases, and New SWD = new student with a disability, which is the sum of the new VR and new PE cases.

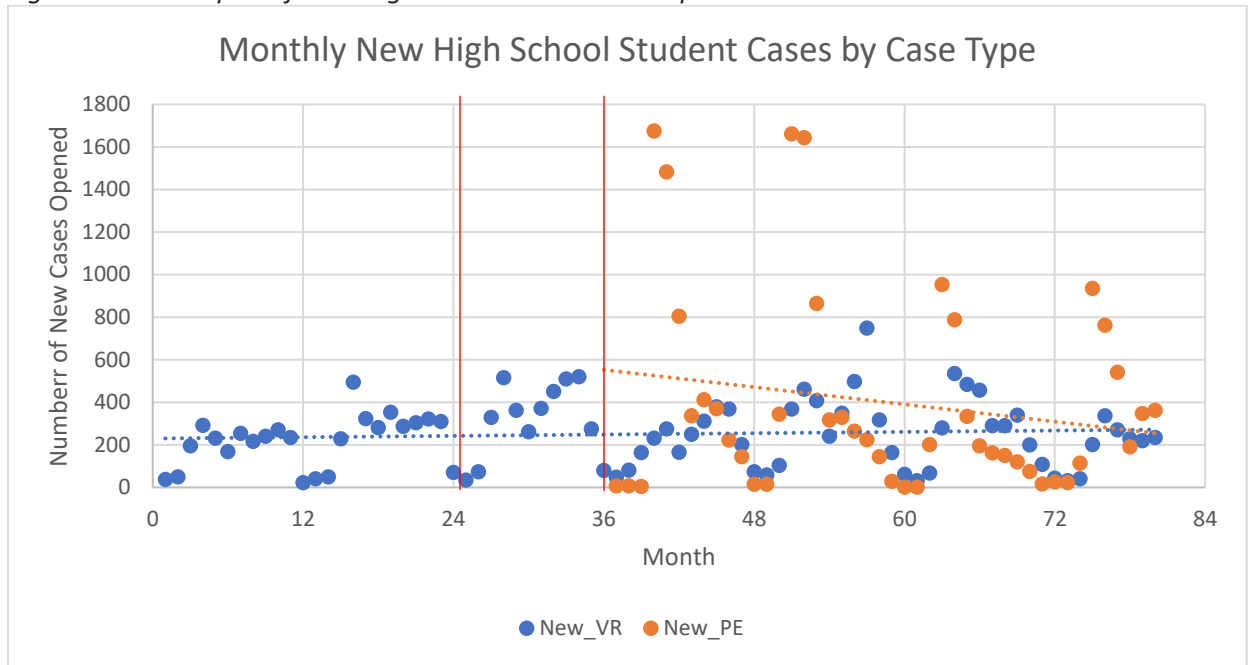
In figure 14 we saw that the total number of high school students accessing VR services increased significantly following the introduction of the new potentially eligible service programs, but within-case type patterns also emerged that can aid in more deeply understanding how the new service programs impacted Missouri VR’s ability to effectively serve high school students with disabilities. Figure 15 provides a visual representation of the number of new cases, broken out by case type, which were opened each month during program years 2013 through 2019. As mentioned, due to limitations in the VR administrative data set, coverage of potentially eligible cases was limited for the years 2015 and 2016. No potentially eligible case data of any kind existed for 2015, and only a total annual case counts existed for 2016. In order to attempt to make use of the limited data available for 2016, monthly new PE case estimates for 2016 were derived based on the monthly patterns established for years 2017, 2018, and

2019. Specifically, the average of the percentage of annual cases opened each month during years 2017, 2018, and 2019 was used to estimate what the monthly new PE cases might have been during 2016.

In looking at figure 15, several interesting observations can be made. First, the month-to-month variation of VR eligible cases opened across years was much more restricted than for PE cases. The first semester of the school year represents a period where substantially more new PE cases are opened compared to other times of the year. The same period represented a peak time for new cases VR cases, but the differences are not as extreme as compared to other months. We can also see that beginning in 2018 the number of cases opened during the fall months was not quite as extreme for new PE cases. Additionally, the months between the two vertical red lines represent the year 2015. While no PE case data were available for this period of time, we can see that new VR cases did not appear to be impacted, as the monthly patterns were similar to those seen for 2013 and 2014. We do see that the new VR case pattern seemed to shift downward beginning in 2016. Perhaps the effects of the new services for potentially eligible students were not felt during the first year of services (2015) due to the time it takes for the potentially eligible service providers to develop new relationships with local school staff and to begin to receive student referrals. By imposing trend lines, we can see that VR cases were opened at a slightly increasing rate across all years. The PE cases were opened at a decreasing rate, which is likely attributed to the natural reduction in available students following the initial new program ramp-up period. Lastly, across both case types we see that the lowest monthly

new case totals occurred during the summer months, which along with the month-to-month patterns described above, reflects school year patterns and reinforces the impact that high schools likely had on the referral process of students for VR services.

Figure 15: Scatterplot of New High School Student Cases per Month

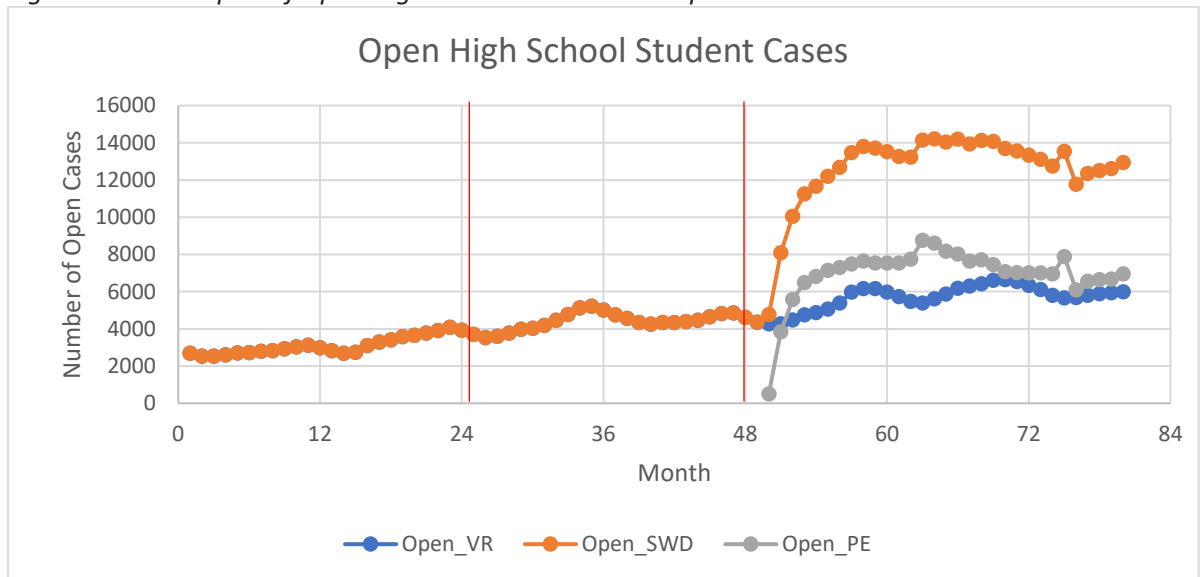


Note: Months 1-12=PY13, 13-24 = PY14, 25-36 = PY15, 37-48 = PY16, 49-60 = PY17, 61-72 = PY18, and 73-80 = PY19. The final four months of PY19 were excluded due to the impact of the COVID-19 pandemic. Months between the vertical red lines represents months that potentially eligible students were receiving services in practice, but for whom PE case data is not available. Month 37 represents the first month that annually aggregated PE case data existed. New\_VR = new VR cases, New\_PE = new PE cases,

Evaluating the number of new cases tells an important part of Missouri VR’s potentially eligible service implementation story, but new cases alone don’t speak to the full impact that the addition of such programs have on the organization’s capacity to serve the new population, as well as, continue to meet its other obligations. Figure 16 depicts the number of cases, broken out by case type, that were open each month beginning in program year 2013 and running through February of 2020. By definition, VR cases remain open until the participant achieves a successful employment outcome,

elects to have their case closed, or after a period of no contact when the counselor elects to close the case. PE cases remain open until the participant exceeds the maximum age for a student with a disability (over 21), is no longer enrolled in secondary or post-secondary education, or becomes a VR eligible participant. Unlike figure 15, where in 2016 the new PE case type data could be estimated for each month, no such estimation was possible for open cases, leaving no PE case data available at all for 2015 and 2016.

Figure 16: Scatterplot of Open High School Student Cases per Month



Note: Months 1-12=PY13, 13-24 = PY14, 25-36 = PY15, 37-48 = PY16, 49-60 = PY17, 61-72 = PY18, and 73-80 = PY19. The final four months of PY19 were excluded due to the impact of the COVID-19 pandemic. Months between the vertical red lines represents months that potentially eligible students were receiving services in practice, but for whom data were not available. Month 49 represents the first month that monthly counts of open PE cases were available. Open\_VR = monthly count of open VR cases and Open\_SWD = monthly count of open VR cases plus open PE cases, Open\_PE = monthly count of open PE cases.

From figure 16 we can see that, as expected, the number of new high school student cases that were “open” each month rises quickly following the beginning of the period of time that potentially eligible case data existed within the administrative data set. Months 49-58 should be considered data catch-up months. During this period of

time new participant-level case data were being entered into the case management system for cases that, in practice, began receiving services as early as 2015. Beginning with month 58, we can see the open case count leveled off, indicating that the data catch-up period likely ended. The annual patterns depicted in figure 15 support the patterns that emerged in figure 16. Not only was the organization absorbing a significantly higher number of student participants into the system, a significantly higher number of students were remaining in the system. We see that the open number of VR cases was trending upward leading up to the intervention period, which began in practice in 2015. We also see that the number of open PE cases was trending down following the initial ramp up period of 2015, 2016, and 2017. Beyond the trend patterns, we see evidence of the extremely large increase in new student participants being served, as the even the lowest number of open cases post-intervention (11,774 cases at month 76) is more than two times the highest number of open cases (5,207 at month 35) prior to 2017 when open PE case data counts became available. In sum, we see evidence to support a significant increase, in terms of magnitude, in the number of students with disabilities receiving VR services of any case type following the introduction of Missouri VR's services for potentially eligible students.

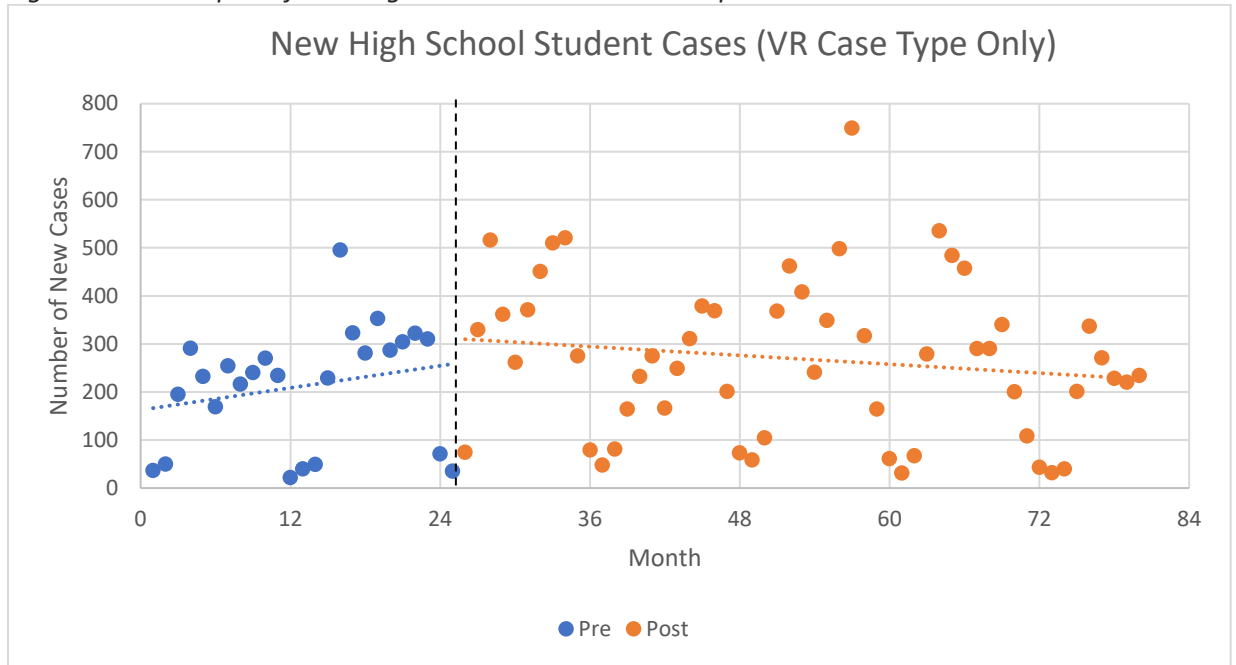
While not surprising, the results reported in this section confirm that Missouri VR's structural policy response had done exactly what it was designed to do, namely dramatically increase the organization's capacity to serve more students. While the new programs were designed to be delivered by third party providers, the fact remains that, as an organization, Missouri VR absorbed a substantial amount of new work. The

remaining six questions in this chapter will focus on better understanding other, perhaps unexpected, effects that the new potentially eligible service programs had on Missouri VR's ability to be effective in its overall service to high school students with disabilities in Missouri.

*Did the introduction of the policy response disrupt patterns in how high school student access VR eligible services?*

This section will address the degree to which the introduction of services for potentially eligible students resulted in a shift in the level and trend of the number of students with disabilities who became VR eligible participants. As described in figure 14 above, the annual patterns in the number of new VR cases opened seemed to change around the period of time when the programs designed to serve the potentially eligible were being implemented. Figure 17 below depicts the number of new VR cases opened each month during the years 2013 through 2019. As we can see from figure 17, the number of new VR eligible cases opened to the left of the intervention line representing the introduction of services to potentially eligible students in practice, appears to be increasing; however, in the post-intervention period, based on the presence of the negative trend line, the number of VR cases opened per month after the services for potentially eligible students were made available in practice, appears to be decreasing.

Figure 17: Scatterplot of New High School Student VR Cases per Month



Note: Months 1-12=PY13, 13-24 = PY14, 25-36 = PY15, 37-48 = PY16, 49-60 = PY17, 61-72 = PY18, and 73-80 = PY19. The final four months of PY19 were excluded due to the impact of the COVID-19 pandemic. PY15 is the first year that potentially eligible students began receiving services in practice. Month 26, which begins to the right of the vertical line, represents the first month that potentially eligible students began receiving services in practice. Pre = pre-intervention months and Post = post-intervention months.

While figure 17 visually depicts changes in new VR case service patterns for the period prior to and after the onset of the introduction of the new services for potentially eligible students, in order to more precisely estimate the impact of the introduction of the new policy response on new VR cases opened each month a linear regression model was specified as follows:

$$\text{Model (1): Number of new high school student VR cases opened per month} = \beta_0 + \beta_1(\_t) + \beta_2(\_x26) + \beta_3(\_x26\_t) + \beta_4(\text{summer}) + \mu$$

As described above, VR began providing services to potentially eligible students with disabilities in August 2015. As a result, August 2015 (month 26) will serve as the intervention start time period. Table 12 describes the dependent and independent



variables used in model (1). A summer dummy variable was included to increase the precision of the coefficients as the summer months typically involve a small numbers of new cases being opened due to students not being in school and therefore not readily as accessible to VR staff.

*Table 12: Model (1) Description of Dependent and Independent Variables*

Variable	Coding Description
<u>Dependent Variable</u>	
New high school student VR cases opened per month	Discrete variable case count
<u>Independent Variables</u>	
_t 2020	month/year code 1-80, 1= July 2013 and 80 = February
_x26	post-intervention period dummy
_x26_t	interaction of x_26 and _t
summer	1 if month is June, July, or August; 0 if any other month

A Shapiro-Wilk test was performed and showed that the distribution of the dependent variable departed significantly from normality ( $W = 0.95$ ,  $p$  value  $<.01$ ). Note that ordinary least squares does not require normality to produce unbiased estimates. In terms of testing for homoskedacity, a Breusch-Pagan test was conducted to test the null hypothesis that the variance of the residuals is homogenous. Results of the Breusch-Pagan test ( $\chi^2 = 13.38$ ,  $p <.01$ ) indicate that we should reject the null hypothesis and

accept the alternative hypothesis that the variance is not homogenous. In order to deal with heteroskedacity, robust standard errors will be used to obtain unbiased standard error estimates.

The results of model (1), which is adjusted using a one lag correction for autocorrelation of the error term, are as follows,  $F(4, 75) = 28.22$ ,  $p < 0.0000$ , adjusted  $R^2 = 0.58$ . Independent variable coefficients are presented in table 13. By summing the coefficients representing the constant and  $\_t$  we can see that the starting level of the new student cases per month in July 2013 was estimated at 242.91 cases. Although not statistically significant, we do see a positive trend in the number of new cases opened per month prior to the onset of the intervention ( $\beta_1 = 3.83$ ,  $p = 0.17$ ). In the first month of the intervention there is no significant change in new cases per month ( $\beta_2 = 37.87$ ,  $p = 0.44$ ), followed by a statistically significant decrease of 5.42 cases per month ( $p = 0.06$ ) in the monthly trend of new cases, relative to the preintervention trend. Lastly, we see that, as expected, cases opened in the summer are significantly lower than cases opened in other, non-summer months ( $\beta_4 = -259.64$ ,  $p = 0.00$ ).

*Table 13: Model (1) Independent Variable Coefficients*

Dependent Variable: New high school student VR cases opened per month				
Independent Variable	Coefficient	Std. Err.	t	p-value
_t	3.83	2.76	1.39	0.17
_x26	37.87	48.77	0.78	0.44
_x26_t	-5.42	2.88	-1.88	0.06
summer	-259.64	25.69	-10.11	0.00
constant	239.08	39.25	6.09	0.00

*Note: Dependent variable is the number of new high school student VR cases per month*

Table 14 provides postintervention linear trend data for model (1). The point estimate of the slope shows a statistically significant negative rate of the number of new cases opened per month over the post-intervention time period ( $\beta_1 + \beta_3 = -1.59$ ,  $p=0.08$ ). All in all, the results of model (1) suggest that the introduction of the new services for potentially eligible students may have disrupted the trend in the rate of high school students becoming new VR eligible participants, shifting the trend in new VR eligible cases downward.

*Table 14: Model (1) Postintervention Linear Trend: Months 26-80*

Linear Trend	Coefficient	Std. Err.	t	p-value
August 2015-February 2020	-1.59	0.89	-1.78	0.08

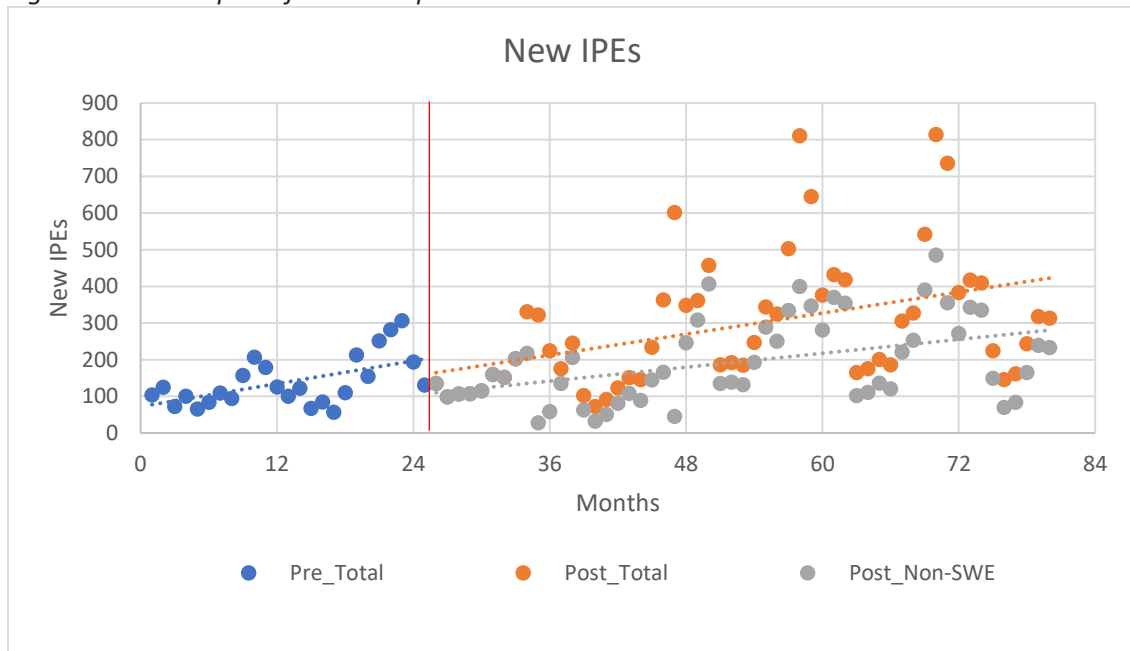
Having seen how the introduction of the Missouri VR’s pre-employment transition service response has impacted how high school students with disabilities

access an open VR eligible case, it is also important to assess the degree to which Missouri VR's response may have impacted how VR eligible students actually receive VR services. Having a case opened is merely a first step toward ultimately receiving VR services. An important predictor of whether or not participants ultimately receive VR services is whether they have an Individualized Plan for Employment (IPE) developed with their VR counselor. The IPE describes an agreed-upon vocational goal and outlines the specific services that will be required to achieve that goal. In addition to opening new cases, an important measure of effectiveness is the ability of the organization to move participants along through the VR case process to the point that they develop an IPE. While Missouri VR's structural response to the policy mandate was designed to minimize the impact on VR counselors, it's important to examine the degree to which the introduction of new programs for the potentially eligible students affected how students ultimately develop an IPE and thus access subsequent VR services. Access to VR eligible services is largely a product of the high school making a referral to the VR counselor and the VR counselor having the capacity to take the referral as well as work with the student to the point of developing an IPE. Given the large influx of new potentially eligible students into the VR services delivery system, opportunity certainly existed for these effects to spill over into unexpected areas such as access to new VR cases and services.

Figure 18 depicts the number of new IPEs developed each month during the years 2013 through 2019. An important caveat within the current study is that one of the new programs that was developed as a result of the pre-employment transition

services mandate, the summer work experience, was designed exclusively for VR eligible participants and thus subject to the development of an IPE in order for the participant to access the service. Beginning in March of 2015, VR counselors began developing IPEs with some students exclusively for the purpose of participation in the summer work experience. In order to get a better estimate of the effect of the overall policy response on VR eligible participant access to traditional VR services, figure 18 provides a monthly count of the total number of IPEs developed, as well as a count of the total number of IPEs minus the number of summer work experience IPEs. As we can see from figure 18, the trend line representing the number of IPEs developed prior to the intervention line representing the introduction of Missouri VR's first pre-employment transition service programs, appears to have a positive slope. In the immediate post-intervention month, we don't see a statistically significant shift up or down, which is not surprising given that Missouri VR's policy response did not occur at a single point in time, but rather was introduced for the first time in August of 2015 and then continued to expand over the next several months. We clearly see the effects of the summer work experience IPEs reflected in the much higher number of total IPEs that were developed in the months leading up to summer break. Otherwise, we see similar monthly patterns for the development of new IPEs after the policy response as prior to its introduction. Lastly, we see positive trend lines for both the number of non-summer work experience IPEs and total IPEs developed each month after the introduction of the policy response. Naturally, the slope representing the monthly total number of IPEs is steeper than the non-summer work experience IPE trend line.

Figure 18: Scatterplot of New IPEs per Month



Note: Months 1-12=PY13, 13-24 = PY14, 25-36 = PY15, 37-48 = PY16, 49-60 = PY17, 61-72 = PY18, and 73-80 = PY19. The final four months of PY19 were excluded due to the impact of the COVID-19 pandemic. Month 26, which begins to the right of the vertical line, represents the first month that potentially eligible students began receiving services in practice. Month 34 is the first month for which summer work experience IPEs began being developed. Pre\_Total = monthly count of IPEs prior to the intervention period, Post\_Total = monthly count of IPEs after the intervention period, and Post\_Non\_SWE = monthly count of non-SWE IPEs after the intervention period.

To assess whether the introduction of Missouri VR’s pre-employment transition service strategies disrupted the number of IPEs developed each month, a linear regression model was specified as follows:

$$\text{Model (2): Number of IPEs developed per month} = \beta_0 + \beta_1(\_t) + \beta_2(\_x26) + \beta_3(\_x26\_t) + \beta_4(\text{fall}) + \mu$$

As described above, VR began providing services to potentially eligible students with disabilities in August 2015. As a result, August 2015 (month 26) will serve as the intervention start time period. Table 15 describes the dependent and independent variables used within model (2). A fall dummy variable was included to increase



The results of model (2) can be seen in table 16. Model (2) was specified using one lag to account for autocorrelation of the error term, are as follows,  $F(4, 75) = 19.04$ ,  $p < 0.0000$ , adjusted  $R^2 = 0.48$ . By summing the coefficients representing the constant  $_{x26\_t}$  and  $_{t}$  we can see that the starting level of the new student cases per month in July 2013 was estimated at 145.09 cases. While IPEs did appear to increase each month prior to the intervention month, they did not increase at a statistically significant rate ( $\beta_1 = 2.99$ ,  $p = 0.39$ ). In the first month of the intervention there was not a significant increase or decrease in new IPEs per month ( $\beta_2 = -4.03$ ,  $p = 0.95$ ). A comparison of the monthly trend of new IPEs after the introduction of the policy response to the monthly trend of new IPEs prior to the introduction of the policy response was positive, at 1.61 IPEs more per month, but was not statistically significant ( $p = 0.65$ ). Lastly, we see that IPEs developed in the fall are significantly lower than the number of IPEs developed in other, non-fall months ( $\beta_4 = -159.14$ ,  $p = 0.00$ ).

*Table 16: Model (2) Independent Variable Coefficients*

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Dependent Variable: Number of IPEs developed per month

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Independent Variable	Coefficient	Std. Err.	t	p-value
$_{t}$	2.99	3.42	0.87	0.39
$_{x26}$	-4.03	60.61	-0.07	0.95
$_{x26\_t}$	1.61	3.58	0.45	0.65
Fall	-159.14	31.43	-5.06	0.00
constant	142.10	49.26	2.88	0.01

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*Note: Dependent variable is the number of new IPEs developed per month.*



Although the rate of growth of IPEs developed per month after the introduction of the policy response was not significantly different from growth prior to the policy, table 17 presents the estimate for the postintervention linear trend, which shows that the number of new IPEs per month increased on a monthly basis beginning with month 26 at a statistically significant rate of 4.60 IPEs per month ( $\beta_1 + \beta_3 = 4.60$ ,  $p = 0.00$ ).

*Table 17: Model (2) Postintervention Linear Trend: Months 26-80*

Linear Trend	Coefficient	Std. Err.	t	p-value
August 2015-February 2020	4.60	1.40	3.28	0.001

Additional analysis was conducted to assess whether the introduction of Missouri VR's pre-employment transition service strategies resulted in a disruption of the number of non-summer work experience IPEs developed each month using the linear regression model specified as follows:

$$\text{Model (3): Number of non-SWE IPEs developed per month} = \beta_0 + \beta_1(\_t) + \beta_2(\_x26) + \beta_3(\_x26\_t) + \beta_4(\text{fall}) + \mu$$

As described above, VR began providing services to potentially eligible students with disabilities in August 2015, so August 2015 (month 26) will serve as the intervention start time period. Table 18 describes the dependent and independent variables used within model (3). As with model (2), a fall dummy variable was included to increase precision of the coefficients as we can see from figure 18 that the months of September, October, and November are months wherein lower numbers of IPEs are developed year over year compared to other months.



\_x26\_t and \_t we can see that the starting level of the new student cases per month following the intervention period was estimated at 132.30 cases. IPEs did not change significantly each month prior to the intervention month ( $\beta= 2.55$   $p=0.16$ ). In the first month of the intervention there was not a significant change in the number of new IPEs developed ( $\beta= -45.30$ ,  $p=0.24$ ). Additionally, there was not a significant increase or decrease in the number of new IPEs developed per month after the introduction of the policy response relative to the preintervention trend ( $\beta= 2.04$ ,  $p=0.31$ ). Lastly, we see that non-summer work experience IPEs developed in the fall are statistically significantly lower than non-summer work experience IPEs developed in other, non-fall months ( $\beta= -108.97$ ,  $p=0.00$ )

*Table 19: Model (3) Independent Variable Coefficients*

Dependent Variable: Number of non-SWE IPEs developed per month

Independent Variable	Coefficient	Std. Err.	t	p-value
_t	2.55	1.81	1.40	0.16
_x26	-45.30	37.82	-1.20	0.24
_x26_t	2.04	2.01	1.01	0.31
fall	-108.97	19.67	-5.54	0.00
constant	129.75	22.39	5.79	0.00

*Note: Dependent variable is the number of non-summer work experience IPEs developed per month*

As was the case when the dependent variable was total number of IPEs developed per month (model 2), while there is not a significant difference between the

pre and post policy introduction trend in new non-summer experience IPEs per month. Table 20 describes postintervention linear trend data, which shows that the number of new non-summer work IPEs per month increased on a monthly basis at a statistically significant rate of 4.59 IPEs ( $\beta_1 + \beta_3 = 4.59$ ,  $p = 0.00$ ).

*Table 20: Model (3) Postintervention Linear Trend: Months 26-80*

Linear Trend	Coefficient	Std. Err.	t	p-value
August 2015-February 2020	4.59	0.89	5.17	0.00

In sum, we can see from the results of this section that evidence exists to support the notion that Missouri VR’s introduction of new services to potentially eligible students may have disrupted and negatively impacted the degree to which high school students became VR eligible participants. Nevertheless, as far as new IPEs go, it appears that the pre- and post-intervention trends differ very little; and the difference is not statistically significant, suggesting that while VR counselors were enrolling fewer VR eligible high school participants, they continued to develop new IPEs at a comparable rate prior to and after the introduction of the new services for potentially eligible students, with continued post-intervention growth. The results of the previous section showed that the new services for potentially eligible students were increasing overall access of students to VR services at the high school level. If, after the intervention period, VR counselors were unwilling or unable to serve VR eligible students at a comparable rate as they were prior to the introduction of the services for the potentially eligible students, we would expect a similar impact across the number of new VR

applicants and new IPEs developed, but that is not the case. It appears that while new cases were opened at a lower rate after the policy was introduced, IPEs actually increased signaling that the VR counselors were capable of continuing to serve VR eligible participants. Given this apparent continued availability of VR counselors to serve VR eligible students, as evidenced by their continued efforts to develop IPEs with high school students, perhaps some other unmeasured factor was causing lower number of new applicants after the introduction of the extra-organizational policy response.

*How often did a potentially eligible student subsequently apply to receive VR eligible services?*

Table 21 describes the time, in days, it took for cases to convert from PE to VR cases, limiting consideration to cases that converted by the end of our observation period. This is an important question to address as it's reasonable to assume that perhaps the rapid influx of new potentially eligible students being served might lead to more VR eligible cases being opened. A case was considered a converted case if the participant entered service initially as a potentially eligible student and then at any subsequent point in time became eligible for VR services. The number of days to convert was calculated as the time, in days, between a participant's PE case application date and their VR case application date. Four cases were excluded because there was missing data related to their date of VR application. Of the remaining 1,259 cases, we can see that, overall, it took an average of 423 days for a PE case to become a VR case.

Additionally, we see that that there were participants that moved from a PE case to a VR

case in only 1 day, and one participant for whom it took 1,010 days from the time their PE case was opened until their VR case was opened.

*Table 21: Summary Statistics Regarding the Number of Days it Takes for a PE Case to Become a VR Case Across All Years*

Observations	Mean Days	Min Days	Max Days
1,259	423	1	1,010

Table 22 describes the time it took, in days, for cases to convert from PE cases to VR cases classified by program year of entry. Potentially eligible cases can become closed in one of three ways: the participant is no longer a student with a disability, meaning they either exceed the maximum age of 21 and/or they are no longer enrolled in secondary or post-secondary training; the participant chooses to cease engaging in services; the potentially eligible participant becomes a VR eligible participant. Of note is the fact that program year 2017 is the only year for which the majority of potentially eligible cases opened had been closed as of the end of program year 2019. With 91% of the potentially eligible cases opened in 2017 being closed, we can glean some information about the degree to which potentially eligible students later became VR eligible participants. Interpretations should be made with caution, however, as issues within the administrative data set are biasing derived results<sup>2</sup>. Potentially eligible case

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<sup>2</sup> Potentially eligible cases that were receiving services in 2015 and 2016 are included in the 2017 count as no participant-level tracking mechanisms were available until 2017. As a result, since the date of entry into services for cases that in practice entered in 2015 and 2016 is identified as occurring in 2017, the length of time that it takes for those cases to close or convert is understated.

data for program year 2017 is inflated due to this being the first year for which the administrative data set included potentially eligible cases. Looking first at 2017, we can see 91% of all PE cases that had an application date within 2017 were closed by the end of 2019, which means that the remaining 9% were still open with the potential to convert sometime after the end of the sample period. We can also see that the mean number of days it took for a potentially eligible case to become a VR eligible case was nearly 1.5 years (505 days). We can see that 12% of potentially eligible cases that were opened in 2017 later converted into VR cases, meaning that 88% of all PE cases opened in 2017 either were closed having never converted into a VR case or were still open. While it's too soon to draw strong conclusions from the data representing 2018 and 2019, we can see that potentially eligible cases opened during 2018 that later became VR eligible cases are on pace to eclipse the percentage from the year prior. While fewer PE cases total were reported as being opened in 2018, likely due to the data tracking problem described above (which inflates the number of cases listed as opening in 2017), we can see that with less than half of all PE cases opened in 2018 being closed by the end of 2019, the conversion percentage already equals that of the prior year. Additionally, we see the mean number of days it took for a PE case to convert to a VR case declined year over year, which is to be expected as with each passing year less time is available for cases to convert. Comparing the percentage of cases that converted within the same program year, we see that the percentage increased from 2017 to 2018, moving from 2.6% to 4.0%, but then declined to 2.5% in 2019. We also see that the percentage of cases that converted within 365 days rose from 3.1% in 2017 to 5.9%

in 2018. No data were available for 2019 as 365 days had not fully passed given the sample date range parameters.

*Table 22: Descriptive Summary of Potentially Eligible Students Who Were Subsequently Determined Eligible for VR, by Program Year of Initial Entry*

	Program Year		
	2017	2018	2019
% of PE cases closed	91%	47%	12%
Mean # days to convert	505	297	97
Total converted PE cases	849	321	93
% of converted PE cases	12%	12%	3%
% converting within same year	2.6%	4.0%	2.5%
% converting within 365 days	3.1%	5.9%	-

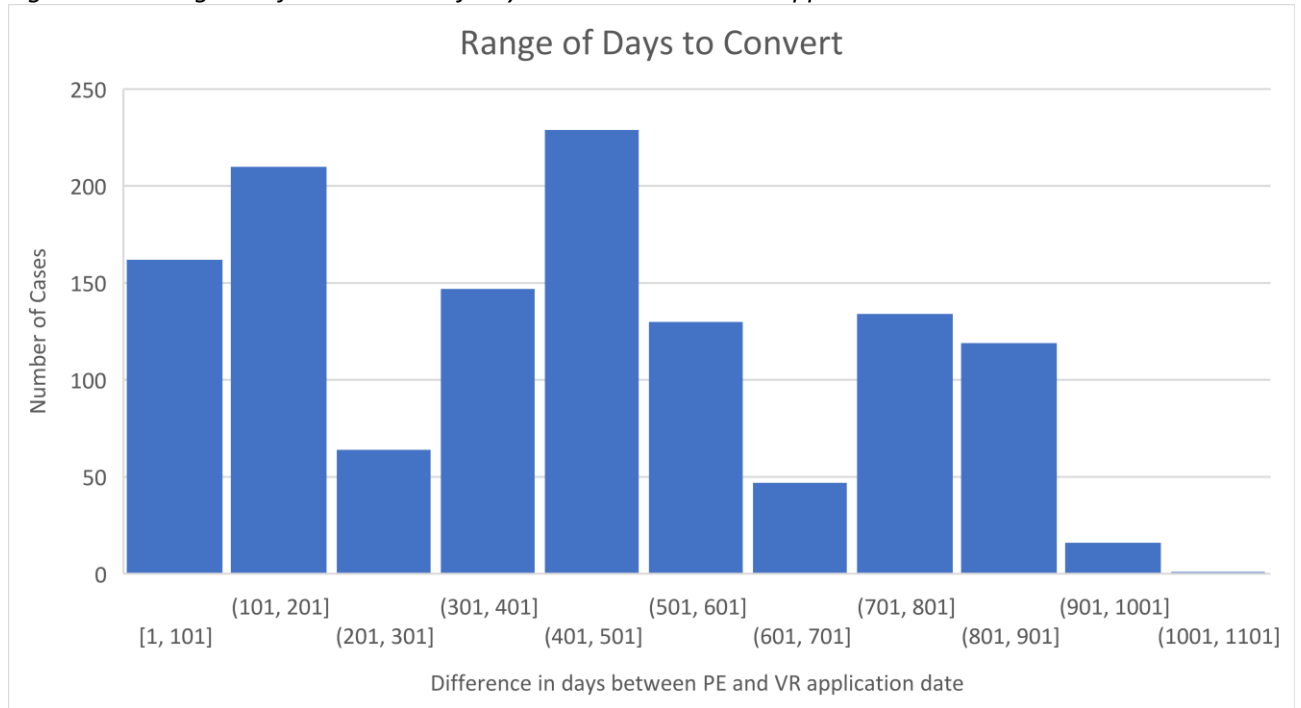
Note: % of PE cases closed is calculated by dividing the number of PE cases opened in a particular year that were closed by the end of 2019 by the total number of PE cases opened in that year. % of converted PE cases is calculated by dividing the total PE cases converted by the end of 2019 by the total number of PE cases opened in a particular year.

Figure 19 depicts the distribution of the number of days between a participant’s PE and VR case application date. As we can see, PE cases were more likely to make the transition to becoming VR cases in two different ranges (between 101-201 days and 401-501 days). Cases were less likely to transition from a PE case to a VR case between 201-301 days, 601-701 days, and then any number of days beyond 901. A likely contributing factor to these results is the seasonal effect of when PE cases and VR cases are opened. As depicted in figure 15 above, PE cases tend to be opened during the



months of September, October, and November, while VR cases are more likely to be opened January through May. These patterns likely emerge in large part due to the availability of access to high school students, which is heavily influenced by referral patterns established by local high school staff.

Figure 19: Histogram of the Number of Days Between VR and PE Application Dates



Note: numbers within brackets represent the range (i.e. [1,101] indicates values that fall between 1 and 101).

An impetus for the introduction of services for potentially eligible students is to make a less intense, or lighter touch, service available to high school students with disabilities as compared to services provided under full-fledged VR eligibility. Certainly not all potentially eligible students want or need VR eligible services, but the results presented clearly point to the fact that the vast majority of the potentially eligible students being served were not subsequently accessing VR eligible services. Similar to

the results from the previous section, there are potentially several explanations for these results. Based on results from the previous section it is reasonable to assume that VR counselors were available to serve VR eligible participants as the number of IPEs developed actually increased after the extra-organizational policy response was introduced. It seems that some other unmeasured factor is influencing these results. Perhaps effective relationships had not developed at the local level between the potentially eligible service providers and the VR counselors to facilitate case conversion. Additionally, perhaps the potentially eligible service providers have not been instructed to make these connections. The available data can't answer these questions with any certainty, but they point to a system that was not, at least initially, supporting the conversion of PE cases into VR cases.

*What are the demographic characteristics of the potentially eligible students, and how do they differ from those of the VR eligible students?*

Table 23 provides a descriptive comparison of key demographic characteristics across the potentially eligible (PE) and VR eligible (VR) participant case types described above. Exploring differences that might exist between key participant-level demographic characteristics will deepen the understanding of the impact of the new services for potentially eligible students introduced in Missouri. As equity is a key value within public administration it is also important to assess the degree to which the implementation practices are producing equitable policy-relevant results. Participant-level administrative data for potentially eligible cases was limited to age, gender, and

race/ethnicity. As such these three demographic characteristics will be used to make comparisons between the potentially eligible and eligible participants.

Of note in table 23 is that the percentage of participants who were male and white was comparable year over year within both of the participant types, staying with a 1-2% point range. The average age at application was relatively stable across the three years for VR, but continued to decline for PE cases year to year. The increasingly lower age at application for the potentially eligible participants was likely a product of the nature of the growth of the newly developed PE programs designed to make services available to as many potentially eligible high school students as possible. Striving to continue to serve as many students as possible pushes the providers of the potentially eligible programs to continue to seek new high school students to serve, which, with each passing year, leads them to enroll younger students than they had previously been serving. It's interesting to see that while the average age at application of the new PE cases declines with each passing year, the gender and race/ethnicity percentages remained very close to the same. Consistency in gender and race/ethnicity could be a signal that although by 2017 the potentially eligible service providers were looking for new (younger) students to serve, high school referral patterns were largely unchanged.

Comparisons across case type yield some interesting results as well. As can be seen in table 23, across each year potentially eligible students were more likely to be younger, male, and white, as compared to VR eligible high school students with disabilities. Since 2017 was the first year that potentially eligible case data were available, only three years of data were available for comparison. First, we see some

practical differences between the average age at application. The average age at application of VR cases was 1.5 years later in a participant’s life (17.6 years of age) as compared to participants who only had a PE case (16.1 years of age). These differences were also statistically significant based on t-test comparisons within each of the three years. The percentage of open VR cases that were male was 6-8% lower than PE cases during the period of 2017-2019, which represents a practically significant and statistically significant difference based on t-test comparisons within each of the three years. Lastly, the differences of the percentage of open VR cases that were white were statistically significant based on t-test comparisons within each of the three years; however, the magnitude of the difference was relatively small with VR cases being only 2-3% lower levels of whites than PE cases during the period 2017-2019.

*Table 23: Participant Demographic Characteristics, by Case Type of Open Participants*

Program Year	Age at Application		% Male		% White	
	PE	VR	PE	VR	PE	VR
2017	16.25*	17.57*	66%*	59%*	85%*	82%*
2018	16.17*	17.54*	65%*	59%*	85%*	83%*
2019	15.94*	17.54*	65%*	57%*	83%*	82%*

*Note: PE = potentially eligible case type and VR = VR eligible case type. All differences were statistically significant based on t-test comparison by case type (PE to VR) within each category (i.e. PE Male compared to VR Male). \* indicates a statistically significant t-test comparison at the .01 level between PE and VR cases within demographic category by year.*

As the administrative data set does not include disability information for potentially eligible cases, table 24 presents data on the primary disability category across VR cases and participants who had a PE case and then later had a VR case (PEVR case). Where equity of access is concerned, it’s also important to evaluate differences in disability type across potentially eligible and VR eligible students. Each participant’s

primary disability has been grouped into one of five categories representing the five primary disability categories as reported in the administrative data set (sensory, physical, cognitive, psychosocial, and other mental impairment). T-test comparisons were conducted comparing the percentage of participants reported as having each disability type across VR and PEVR case types. As noted in table 24, all within-disability type percentages were statistically significant based on t-tests conducted within each year comparing VR and PEVR case types with the exception of those with a psychosocial disability in 2017 and those with a disability classified as “other mental impairment” in 2017, 2018, and 2019. Substantive comparisons can tell us something about the types of students who initiate as a PE case and later become a VR case, as well as how those types of cases compare to the VR cases overall. For example, we can see that students with a sensory disability who start out with a PE case and later have a VR case comprised 2%-3% less of the overall population of PEVR cases as compared to VR cases. A similar relationship exists when comparing participants with a physical disability across both case types, but the difference is more pronounced at 6%-7%. We can also see that a smaller percentage of PEVR cases were students with a psychosocial disability as compared to VR cases. In 2017 the difference was 1% but increased to a 7% difference by 2019. The reverse relationship exists when comparing VR cases to PEVR cases on cognitive impairment. Beginning in 2017 we see that 5% more of the PEVR cases were students with a cognitive impairment as compared to the VR cases and by 2019 this difference had grown to 11%. Lastly, no real substantive difference existed when we compare the percentage of those with a disability categorized as “other

mental impairment” across the two case types. While we didn’t have participant-level disability data for the potentially eligible population, the results reported in table 24 clearly point to some substantive differences in disability characteristics between VR and PEVR case types. The results could be a signal of differences in the disability characteristics of the students accessing PE cases as compared to those accessing VR cases.

*Table 24: Primary Disability Characteristics, by Case Type of Open Participants*

Program Year	Sensory		Physical		Cognitive		Psychosocial		Other Mental	
	VR	PEVR	VR	PEVR	VR	PEVR	VR	PEVR	VR	PEVR
2017	8%*	6%*	10%*	4%*	54%*	59%*	23%	22%	4%	3%
2018	8%*	6%*	9%*	3%*	53%*	60%*	24%*	20%*	3%	3%
2019	8%*	5%*	11%*	4%*	49%*	60%*	26%*	19%*	3%	3%

*Note: PE = PE case type, VR = VR case type, and PEVR = a participant who entered as a PE case, but later became a VR case. \* indicates a statistically significant t-test comparison between PE and PEVR cases within disability type and year.*

Overall, the programs designed to serve potentially eligible students were enrolling students at much younger ages than the VR eligible student participants each year for which data exists. We can also see that the potentially eligible students were more likely to be male and white when compared to VR eligible students within each year. These results suggest that the potentially eligible providers and the VR counselors were serving slightly different populations. The fact that the potentially eligible providers were initially engaging with younger students is expected as this was a key intention of the policy change. However, it is unexpected that the practically and

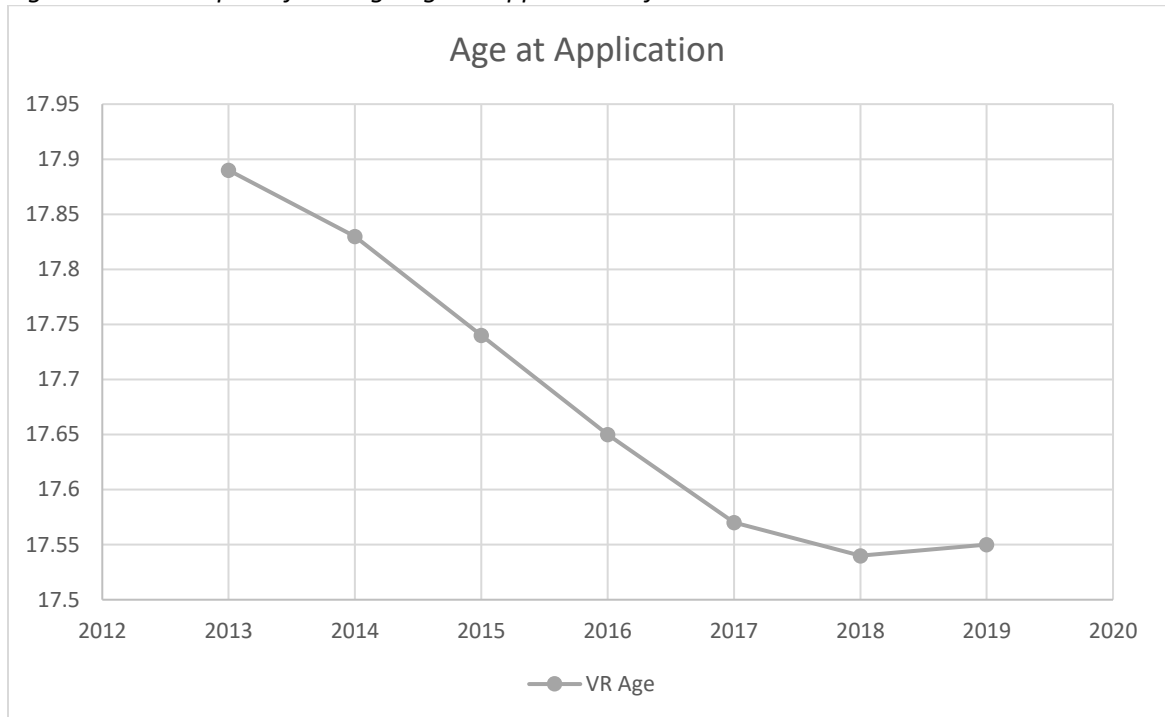
statistically significant gender and race/ethnicity differences revealed themselves when comparing PE to VR eligible participants. Although participant-level potentially eligible case disability data does not exist, we do see evidence of differences in the disability characteristics of students accessing potentially eligible and VR eligible services, based on a comparison of the disability characteristics of the VR cases and the PEVR cases. As the high school is the driver of referrals to both of these providers, it seems possible that the potentially eligible providers were perhaps engaging with different high schools and in turn students with different demographic characteristics than the VR counselors, or that the high school staff were electing to refer different types of students to receive services as a potentially eligible versus eligible student.

*How do the demographic characteristics of the VR eligible students change following the introduction of Missouri VR' policy response?*

While PE case data didn't exist until 2017 and even then, offered limited participant-level characteristics, participant level case data for VR eligible participants was available for the entire sample period of 2013-2019, providing an opportunity to evaluate trends over a longer period of time. Figures 20, 21, and 22 provide a visual representation of how key participant demographics changed over time among VR cases. Starting with figure 20, we can see that in the years leading up to the introduction of services for the potentially eligible in 2015, the average age at application was declining and continued to further decline at a similar rate until 2018, when it appeared to begin to level off. This trend is interesting for a couple of reasons. First, while an imperative of the policy change before WIOA was to serve students at a younger age,

Missouri's VR counselors were doing just that, albeit not to the degree that the potentially eligible programs were. Second, the fact that the average age at application levels off in 2018 could suggest that VR counselors and/or high school staff making student referrals had changed their behavior knowing that the potentially eligible services were now available and designed to serve younger students.

Figure 20: Scatterplot of Average Age at Application of VR Cases



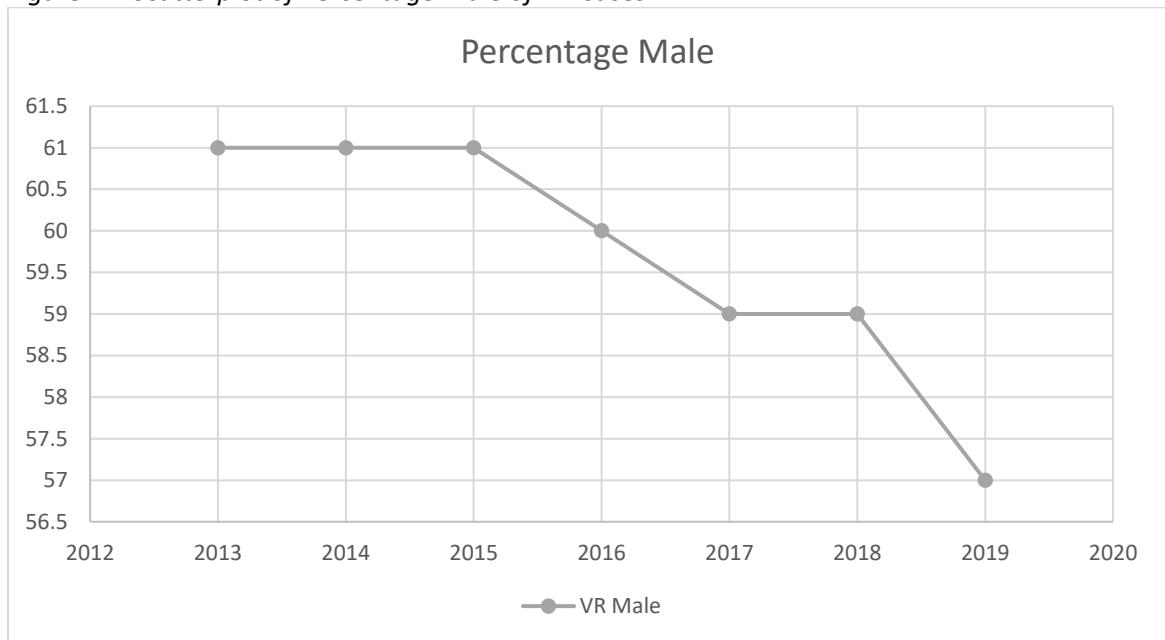
Note: VR Age = average age at application of VR eligible applicants

In terms of the percentage of male students being served with a VR case, we can see from figure 21 that over the first three years 61% of all VR cases were male. Again, we see a change in the pattern sometime around and after the introduction of the new programs for potentially eligible students in 2015, with the percentage of VR cases who were male steadily trending down, culminating with a low of 57% in 2019. While a variety of explanations could certainly exist for this shift, the timing suggests that VR



counselors and/or the referring high school staff may have changed how they received/provided high school student referrals. Prior analysis (see table 21) revealed that PE cases were more male than VR cases during the period of 2017-2019, so perhaps for some unknown reason high school staff referred more of their male students to the programs for potentially eligible and, once involved with those programs, those students who in the past would have been referred to VR counselors were now being referred to potentially eligible providers.

Figure 21: Scatterplot of Percentage Male of VR Cases

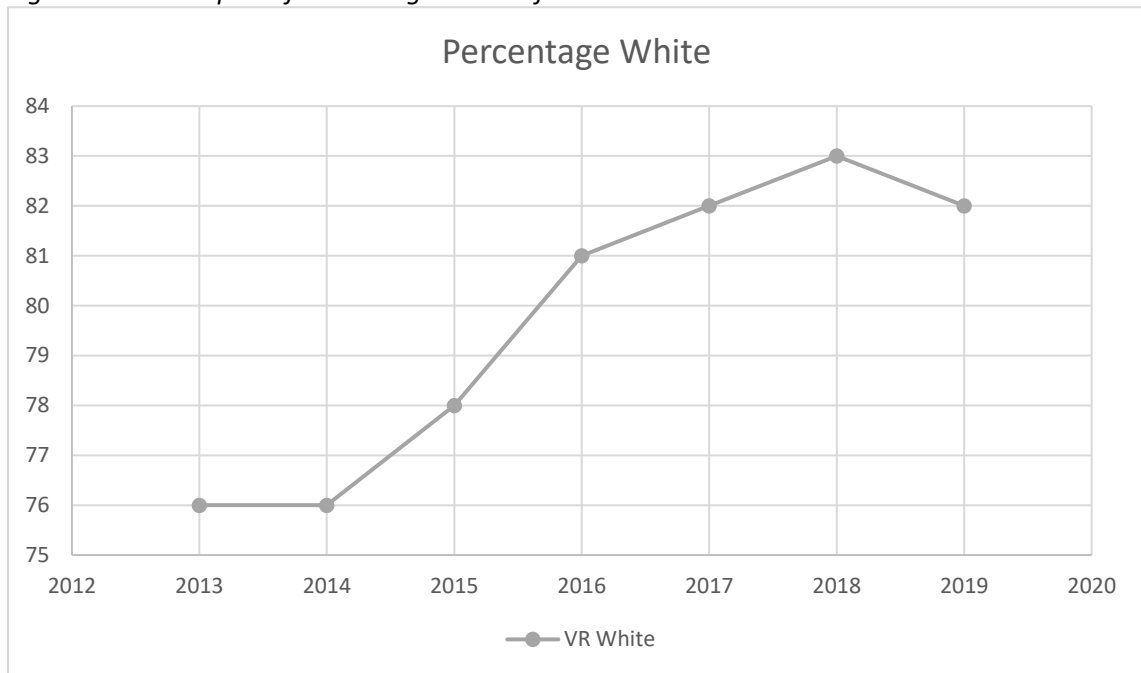


Note: VR Male = percentage of VR participants who are male

Regarding the percentage of white students being served with a VR case, we can see from figure 22 that, during the first two years for which data existed, open VR cases were 76% white. Beginning in 2015, we see growth each year to a peak of 83% in 2018. As with average age at application and gender, there may be a variety of explanations

for this trend. Again, the timing suggests that VR counselors and/or referring high schools changed how they receive/make student referrals. So, perhaps the new programs for the potentially eligible students were creating new opportunities for student referrals that disproportionately served white students, and this affected the demographics of students referred for VR eligible services.

Figure 22: Scatterplot of Percentage White of VR Cases

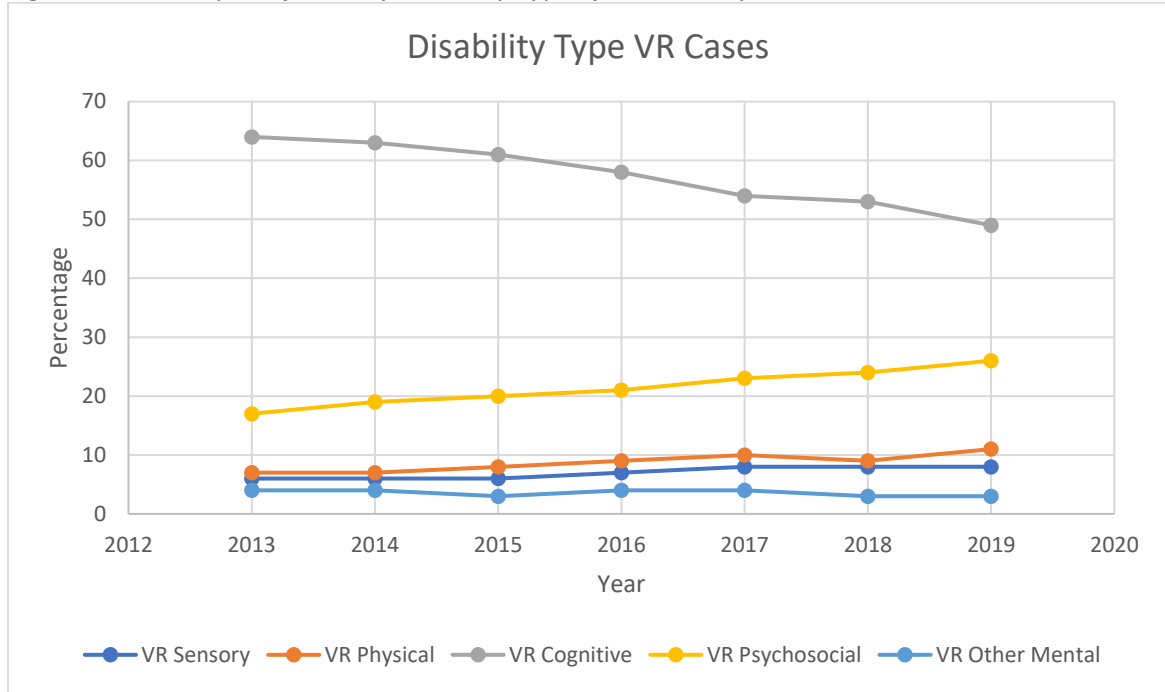


Note: VR White = percentage of VR participants who are white

Figure 23 displays the percentages of each disability category for VR cases across the years 2013-2019. First, we can see that the disability categories “psychosocial” and “cognitive” together represented more than 75% of all VR cases, with a relatively small number of cases represented by the other three disability types. Additionally, we can see the percentage of students with a cognitive disability declines while the percentage of students with a psychosocial disability increases year over year. It’s unclear what may

be driving these changes as both trends initiated before the introduction of the new programs for the potentially eligible and seemed to continue after. All in all, it's not clear that the introduction of the new programs to serve the potentially eligible had a substantive impact on the disability characteristics of VR eligible student participants.

Figure 23: Scatterplot of Primary Disability Type of VR Cases by Year



In summary, visual analyses of the changes in demographic characteristics of VR eligible participants seems to show changing dynamics that occur on or around the time of the introduction of the extra-organizational response; particularly as it relates to age, gender and race. It's reasonable to assume that the changes in local practices may have played a role in causing these differences. As such, the next sections will look more closely at the relationship between local level factors and student participation in potentially eligible and eligible VR services.

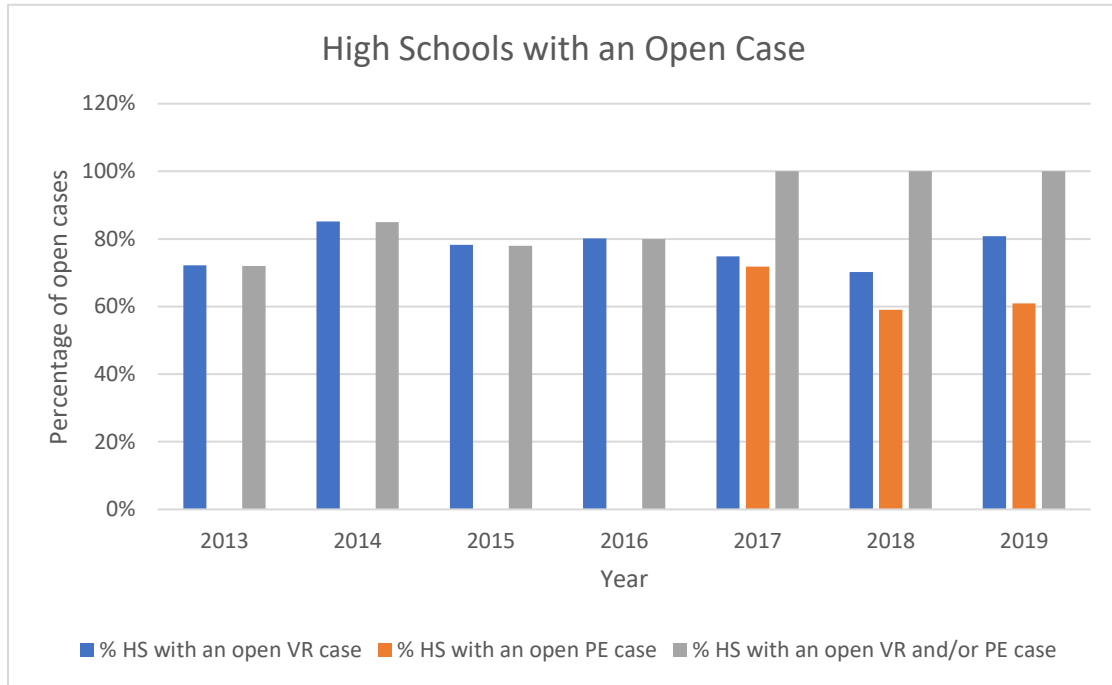
*How do local factors associated with Missouri's public and charter high schools influence access to VR services for potentially eligible high school students with disabilities?*

Results presented in this section are intended to offer a description of the relationship between local factors and access to VR services for both potentially eligible and eligible students. Prior sections of this chapter focused on analyses at the student level; however, given the significant influence of the high school in referring students to VR, results from this section will provide estimates of the influence of local factors associated with the high school on student access to VR. Results from this section will first estimate the relationship between important local level characteristics and potentially eligible student participation in VR services during the first three years for which available data on both VR and PE participants existed (2017-2019). This analysis is important in understanding how the new programs were implemented across the state. Results from the next section will provide estimates of the nature of the relationship between such local characteristics and the degree to which access to VR services for the eligible student population may have changed across the full period of time for which data were available (2013-2019). These results will help to understand how the relationship between key variables may have changed after the introduction of Missouri VR's extra-organizational policy response.

To begin, it's important to first get a general idea of how Missouri VR was engaging with Missouri's public and charter high schools across the state. Figure 24 indicates the percentage of Missouri high schools that had a student participant of each case type (PE or VR) by year. Prior to the availability of participant-level PE case data in

2017, we can see that VR counselors were providing services to eligible participants in between 72% and 85% of high schools in the state. Even after the availability of PE case data we can see that VR counselors continued to provide services to VR eligible students at between 70% and 81% of Missouri high schools. In terms of high schools with at least one potentially eligible participant we can see that across the three years for which data were available, 72% of high schools had a student participant in 2017, followed by 59% and 60% in the two subsequent years. Recall from prior discussions that the PE case data for 2017 was inflated as it represents cases that were served in either 2015 or 2016, as well as 2017, which is likely biasing the number of schools represented. Also, of interest is that we see that 100% of Missouri's public and charter high schools had at least one potentially eligible or eligible participant for each of the three years that PE case data were available. As the VR pattern didn't seem to change much across the range of years, these results suggest that the providers of the services for the potentially eligible student population were successful in engaging high schools where the VR staff had no student participants. It's important to note that PE case data contained in the administrative data set did not provide the student's high school name for approximately 33% of all PE cases. In order to conduct analyses without eliminating such a large proportion of the sample, student residence zip codes and/or county data were used to assign students with no assigned high school name to the nearest high school, essentially creating a proxy high school for each student for whom high school name data were missing (See Appendix A for data set construction details).

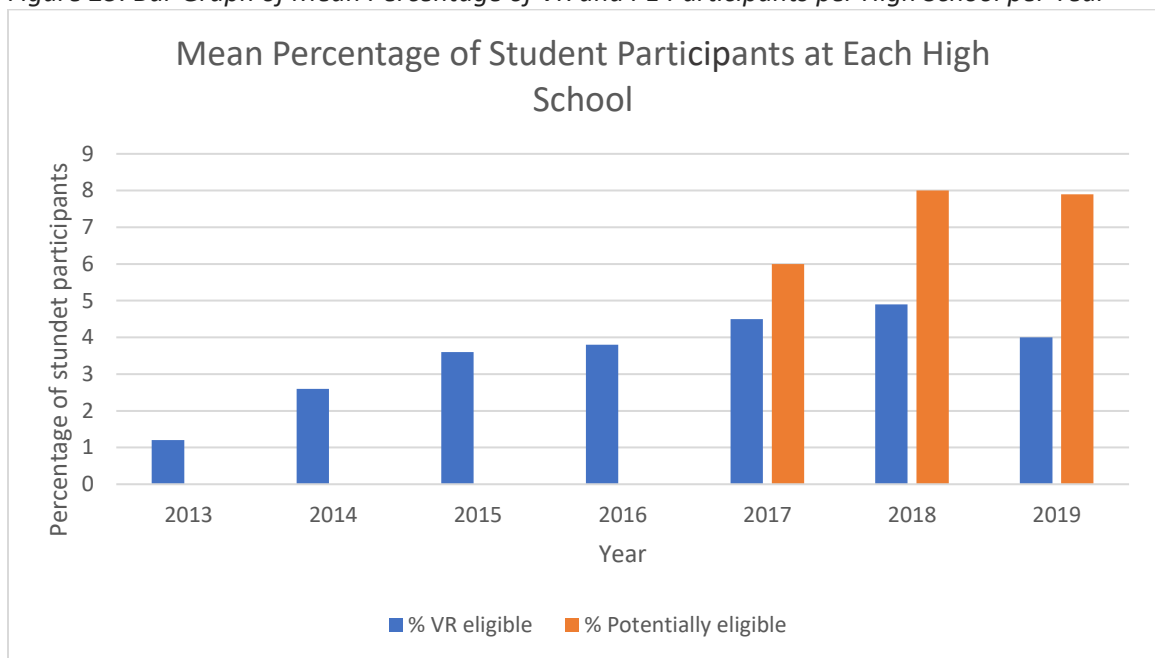
Figure 24: Bar Graph of Percentage of Missouri High Schools with an Open VR and/or PE Case



To enable a comparison of potentially eligible and eligible participant rate at each high school, it was important to first standardize student enrollment across Missouri’s 560+ high schools. The percentage of potentially eligible and eligible high school participants at each high school for each year was calculated. The calculation consisted of dividing the total number of participants at each high school who were served as either a potentially eligible or eligible participant by the total student enrollment at the associated high school. Figure 25 presents the statewide percentage of potentially eligible and eligible participants across each year. The data reported in figure 25 represent the mean percentage of open cases at each of Missouri’s high schools by case type, each year. The results presented are consistent with patterns that have been demonstrated in prior sections of this chapter. Specifically, we saw an upward trend over the years beginning in 2013 in terms of VR eligible student

participants with a leveling off of sorts in the 4%-5% range for the period after the full implementation of the new programs (2017-2019) designed to serve the potentially eligible students. Regarding the potentially eligible students we saw higher percentages of participants as compared to the VR eligible participants, and we saw evidence that the programs' growth appears to be leveling off at about 8% in years 2018 and 2019.

Figure 25: Bar Graph of Mean Percentage of VR and PE Participants per High School per Year



Moving beyond statewide observations, it is important to also consider the influence of local, high school-level effects on the manner in which services for potentially eligible and eligible students were made available across the state. It is also important to evaluate these relationships separately as the services provided to each case type, potentially eligible or eligible, were provided to students in the same high schools but by different providers. Services to the potentially eligible were provided via

the network of third-party providers, which comprised Missouri VR's extra-organizational policy response, while services to eligible students were provided to students by VR counselors. Five ordinary least squares models were utilized to better understand the relationship between various key high school characteristics and the percentage of potentially eligible students who participated at each high school each year 2017-2019. Additionally, analyses were conducted for each program year separately in an effort to better understand how the extra-organizational policy response was rolled out to the potentially eligible students, as well as to better understand the impact on VR eligible students of the introduction of the extra-organizational policy response. Note that ordinary least squares does not require normality to produce unbiased estimates. In order to deal with potential heteroskedacity, robust standard errors will be used with each model to obtain unbiased estimates of standard errors.

The five models are specified as follows:

$$\text{Model (4): } \%PE = \beta_0 + \beta_1 (\%White) + \mu$$

$$\text{Model (5): } \%PE = \beta_0 + \beta_1 (\text{Median Income}) + \mu$$

$$\text{Model (6): } \%PE = \beta_0 + \beta_1^j + \mu$$

$$\text{Model (7): } \%PE = \beta_0 + \beta_1^k + \mu$$

$$\text{Model (8): } \%PE = \beta_0 + \beta_1 (\%White) + \beta_2 (\text{Median Income}) + \beta_3^j + \beta_4^k + \mu$$

*Note: j = dummy variables for high school enrollment quintiles. k = dummy variables for the VR district office.*



Table 25 describes the variables included in models (4-8) and table 26 provides mean values and standard deviation of dependent and independent variables used in models (4-13) by year. It's important to note that while services to potentially eligible students are not provided or directed out of a VR district office, including an independent variable representing the VR district office provides the best available way to capture any unmeasured local/regional factors that may be relevant, as the staff providers of the potentially eligible services tend to be organized around similar geographic patterns.

*Table 25. Models (4-8) Dependent and Independent Variables*

Variable	Coding Description
<u>Dependent Variable</u>	
% PE	number of open PE cases divided by the total student enrollment at a high school
<u>Independent Variables</u>	
% White	% of residents who are white within the high school building zip code
Median Income	median household income within the high school building zip code
VR D.O.	VR District Office assigned to serve high school; 22 dummy variables for 23 districts; 1=high school is assigned; 0 = high school is not assigned
Q1-Q5	High school student enrollment quintile; 4 dummy variables for 5 quintiles; 1 = high school enrollment falls within the quintile; 0 = high school enrollment does not fall within the quintile

Table 26: Mean Values of Independent Variables Included in Models (4-13), by Year

Year	% PE	% VR	% White Residents	Med. Income	Q1	Q2	Q3	Q4	Q5
2013	-	1.2% (2.2%)	89% (17%)	\$44,509 (\$13,892)	46.9	125.9	237.5	549.2	1436.8
2014	-	2.7% (3.6%)	89% (17%)	\$45,121 (\$14,237)	45.9	123.6	236.8	540.6	1453.6
2015	-	3.6% (4.0%)	89% (17%)	\$45,313 (\$14,394)	44.7	122.9	238.4	540.8	1462.8
2016	-	3.8% (5.2%)	89% (17%)	\$46,462 (\$14,886)	44.5	126.6	239.3	542.3	1473.5
2017	5.9% (7.3%)	4.4% (7.7%)	89% (17%)	\$48,427 (\$15,671)	43.1	122.7	233.6	531.5	1469.7
2018	8.0% (9.3%)	4.9% (8.9%)	89% (17%)	\$50,282 (\$16,208)	43.6	121	230	529.4	1474.2
2019	7.9% (8.9%)	4.0% (7.6%)	89% (17%)	\$52,333 (\$17,095)	44.1	119.9	230.6	528.3	1493.7

Note: standard deviation provided in parentheses. Q1 = mean enrollment of first quintile, Q2 = mean enrollment of second quintile, Q3 = mean enrollment of third quintile, Q4 = mean enrollment of fourth quintile, and Q5 = mean enrollment of fifth quintile.

Before evaluating the results of the full model (model 8), the zero-order relationships (identified in models 4-7) will be compared across years so as to first develop an understanding of the degree of the relationship of each of the independent variables with the percentage of potentially eligible participants at each high school, as well as how those relationships change over time.

#### Model (4)

Table 27 provides results of model (4) as specified above for each of the years 2017, 2018, and 2019. When the percentage of white residents is the lone predictor variable, we see models that provide consistent results each year. Specifically, each model explained a small amount of the variance associated with the dependent variable and demonstrated a positive statistically significant relationship between the

percentage of white residents and the percentage of potentially eligible students at each high school, with the coefficients increasing in magnitude from 2017 to 2018, and then decreasing back close to the starting magnitude in 2019. These results imply that a student who attended a high school that was located within a zip code with a higher percentage of white residents was more likely to be a potentially eligible participant than students who attended a high school in a zip code where the percentage of white residents was lower, and that relationship was relatively consistent over the three-year time period 2017-2019.

*Table 27: Model (4) Results*

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Dependent Variable: % PE

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Independent Variable	2017	2018	2019
% White	0.0753*** (0.0096)	0.0831*** (0.0128)	0.0747*** (0.0141)
Constant	-0.0069 (0.0079)	0.0067 (0.0117)	0.0127 (0.0133)
Observations	548	547	544
F	61.57	42.23	27.98
Adjusted R <sup>2</sup>	0.0299	0.0214	0.0177

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Note: Dependent variable is percentage of potentially eligible (PE) cases open at each high school. Robust standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

*Model (5)*

Table 28 provides results of model (5) as specified above for each of the years 2017, 2018, and 2019. When the median household income of the zip code in which the high school resides was the lone predictor variable, we see models that each explained a small amount of the variance associated with the dependent variable; however each demonstrated a statistically significant negative relationship between household income and the percentage of potentially eligible participants at each high school, with coefficients increasing in magnitude from 2017 to 2018, and then decreasing to its weakest magnitude in 2019. These results suggest that when the median household income was the lone predictor variable a student who attended a high school with a lower household income was more likely to be a potentially eligible participant than a student who attended a high school in a zip code where the median household income was higher.

*Table 28: Model (5) Results*

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Dependent Variable: % PE

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Independent Variable	2017	2018	2019
Median Inc	-0.0067** (0.0017)	-0.0078** (0.0023)	- 0.0053*** (0.0025)
Constant	0.0924** (0.0092)	0.1194** (0.0124)	0.1068** (0.0135)
Observations	548	547	544
F	16.52	11.73	4.38
Adjusted R <sup>2</sup>	0.0193	0.0166	0.0084

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Note: Dependent variable is percentage of potentially eligible (PE) cases open at each high school. Robust standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

*Model (6)*

Table 29 provides results of model (6) as specified above for each of the years 2017, 2018, and 2019. When a dummy variable indicating the enrollment quintile group was the lone predictor variable, we see models that explain a much larger amount of the variance associated with the dependent variable as compared to models (4) and (5). Additionally, each of the coefficients in table 29 demonstrates the existence of a statistically significant positive relationship between enrollment quintile and the percentage of potentially eligible participants at each high school as compared to the quintile representing the highest enrollment. The magnitude of the coefficients representing the relationship between each quintile and the dependent variable increases as we move from quintile 4 to quintile 1, as compared to the omitted quintile 5 group. We can also see that across all quintiles the magnitude of the relationship strengthened from 2017 to 2018 and then for all quintiles, except for quintile 2 it strengthened from 2018 to 2019, absent any other controls. These results indicate that a student who attended a high school with a lower overall enrollment was much more likely to be a potentially eligible participant than students who attended a high school where the overall enrollment was higher, and the strength of that relationship grew stronger with each passing year.

*Table 29: Model (6) Results*

Dependent Variable: % PE			
Independent Variable	2017	2018	2019
Q1	0.1078*** (0.0118)	0.1531*** (0.0146)	0.1548*** (0.0142)
Q2	0.0485*** (0.0043)	0.0623*** (0.0049)	0.0599*** (0.0044)
Q3	0.0329*** (0.0038)	0.0450*** (0.0046)	0.0460*** (0.0042)
Q4	0.0178*** (0.0029)	0.0240*** (0.0038)	0.0251*** (0.0034)
Constant	0.0183*** (0.0014)	0.0233*** (0.0016)	0.0216*** (0.0015)
Observations	548	547	544
F	64.84	83.73	98.56
Adjusted R <sup>2</sup>	0.2559	0.3165	0.3408

Note: Dependent variable is percentage of potentially eligible (PE) cases open at each high school. Quintile 5 is the omitted reference group. Robust standard errors are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

*Model (7)*

Table 30 provides results of model (7) as specified above for each of the years 2017, 2018, and 2019, where VR district office dummy variables served as the lone predictor variable. See Appendix H for a map describing the geographic territory covered by each VR district office. As a reminder, each high school is assigned to a unique VR district office, so the estimates from model (7) identify differences between district office in the average PE level of high schools. We see models that explain more of the variance in the dependent variable than either model (4) or (5), but less than model (6). Coefficient estimates across the years are relatively stable within district offices. 10 out of 22 VR district office dummies had a statistically significant negative

relationship with the dependent variable as compared to the omitted district (Cape Girardeau) across all three years (Kansas City Downtown, Kansas City North, Nevada, Springfield North, Springfield South, St. Charles, St. Louis Downtown, St. Louis North, St. Louis South, and St. Louis West). 4 VR district offices had at least one year where the relationship was statistically significant as compared to the omitted group, but had other years when it was not (Joplin, Kansas City East, Sedalia, and St. Joseph). The remaining 8 VR district offices had no statistically significant relationship with the dependent variable at any point as compared to the omitted group. Of significant note is the fact that the direction of the relationship did not change for any VR district office with statistically significant results across time. These results suggest that substantial variation in the likelihood of a student being a potentially eligible participant existed across VR districts. Of those 10 VR district offices that had a statistically significant negative relationship, 9 of them were from Missouri's 3 largest population centers (St. Louis, Kansas City, and Springfield). It's possible that these effects are associated with characteristics of the high school, or characteristics of the VR district office region, although it's not entirely clear at this point. As a reminder, the VR district office does not bear direct responsibility for serving potentially eligible students, but the presence of such regional variation provides clues as to the presence of local effects that were not a direct result of district policy.

Table 30: Model (7) Results

Dependent Variable: % PE			
Independent Variable	2017	2018	2019
Chillicothe	0.0148 (0.0169)	0.0089 (0.0262)	0.0101 (0.0192)
Columbia	-0.0168 (0.0178)	-0.0238 (0.028)	0.004 (0.0274)
Farmington	0.0149 (0.0246)	-0.022 (0.0235)	-0.0171 (0.0185)
Hannibal	0.0077 (0.0342)	0.0051 (0.0483)	-0.0131 (0.0247)
Jefferson City	-0.0147 (0.018)	-0.0268 (0.0255)	0.0035 (0.0266)
Joplin	-0.0306 (0.0238)	-0.0567* (0.030)	-0.018 (0.039)
Kansas City Downtown	-.0519*** (0.0154)	-.0827*** (0.0224)	-.0665*** (0.0177)
Kansas City East	-0.0418** (0.0189)	-0.0691** (0.0276)	-0.0325 (0.036)
Kansas City North	-.0487*** (0.0145)	-.0772*** (0.0254)	-0.0536** (0.0253)
Kirksville	0.0281 (0.0188)	0.0089 (0.0299)	0.0144 (0.0204)
Nevada	-0.0362** (0.0142)	-.0669*** (0.0205)	-.0450*** (0.0161)
Rolla	0.012 (0.0224)	-0.0035 (0.0317)	0.0228 (0.0356)
Sedalia	-0.0258* (0.014)	-0.0482** (0.0225)	-0.023 (0.0171)
Spring North	-0.0321** (0.0134)	-0.0517** (0.0206)	-0.0354** (0.0159)
Spring South	-0.0320** (0.0139)	-.0607*** (0.021)	-0.0382** (0.0169)
St Charles	-.0614*** (0.0128)	-.0892*** (0.0212)	-.0654*** (0.0192)
St Joseph	-0.0223 (0.0142)	-0.0463** (0.0209)	-0.0232 (0.0169)
St Louis Downtown	-.0757*** (0.0125)	-.1133*** (0.0198)	-.0858*** (0.0155)
St Louis North	-.0736*** (0.0122)	-.1052*** (0.0205)	-.0885*** (0.0153)



St Louis South	-.0510*** (0.0127)	-.0812*** (0.0202)	-.0583*** (0.0193)
St Louis West	-.0446*** (0.0166)	-.0711*** (0.0238)	-0.0528** (0.0206)
West Plains	0.0072 (0.0212)	-0.0068 (0.0264)	-0.0059 (0.0202)
Constant	0.0801*** -0.0121	0.1207*** -0.0194	0.1025*** -0.0143
Observations	548	547	544
F	18.99	11.79	9.45
Adjusted R <sup>2</sup>	0.0832	0.0869	0.0446

Note: Dependent variable is percentage of potentially eligible (PE) cases open at each high school. Cape Girardeau is the omitted reference group. Robust standard errors are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

### *Model (8)*

Table 31 provides results of model (8) as specified above for each of the years 2017, 2018, and 2019. Model (8) is the “full” model, which includes coefficients describing the relationship between each of the previously described independent variables of interest and the percentage of potentially eligible participants at each high school. First, we see that the independent variables representing the percentage of residents who are white and the median household income of residents within the zip code of the high school building were no longer statistically significant when all controls were included. We can also see that in both cases their coefficients move closer to zero across all years as compared to their zero-order models. This push toward zero when controls were included not only affects the substantive significance of the interpretation, but also suggests that the effects of the percentage of residents who were white and the median household income on the dependent variable suggested by the zero-order models were actually due to the effects of other variables controlled for in the full model. We also see that the statistical significance of high school size

persisted when comparing the zero-order to full model coefficients, with the nature and patterns of the relationship of each quintile as compared to the omitted quintile being statistically significant and increasing in magnitude over time. The magnitude of the coefficients is similar across all quintiles and years when comparing the zero-order model to the full model, with certain coefficients slightly higher and others slightly lower. These results suggest that high school size represents a unique aspect of the variance across high school potentially eligible participation rates that is not strongly tied to the other controls (percentage of white residents, median household income, and VR district office region). This is important where equity in access is concerned. Lastly, when controlling for all other factors included in the model we see that there were only three VR district offices (Nevada, St. Joseph, and St. Louis Downtown), which had a statistically significant relationship with the percentage of potentially eligible student participants at each school as compared to the omitted group across all three years. Additionally, there were nine VR district offices (Chillicothe, Kansas City Downtown, Kansas City North, Rolla, Sedalia, Springfield North, Springfield South, St. Charles, and St. Louis North) that exhibited a statistically significant relationship in one or more of the years as compared to the omitted group; however, the direction of the relationship did not change for any of the district offices. Recall from model (7) that VR district offices in St. Louis, Kansas City, and Springfield had statistically significant negative relationships with the dependent variable. One possible explanation is that these regions have high schools with the highest student enrollment numbers in the state. Given the results presented in this section, we know that high schools with lower

student enrollment numbers tend to have higher percentages of potentially eligible participants. Additionally, when we compare the magnitude of the coefficient change among VR district offices moving from model (7) to model (8), we see that those district offices that experienced the highest magnitude in a shift in their coefficients (regardless of direction) included Chillicothe and then offices located within the Kansas City and St. Louis metro areas. With the exception of Chillicothe, these coefficients moved closer to zero when control variables were introduced. Given the fact that high schools in the Kansas City and St. Louis metro areas have on average higher enrollment, these results offer support for the seemingly strong influence that high school enrollment size, and the model indicates that this explains some apparent district differences.

*Table 31: Model (8) Results*

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Dependent Variable: % PE

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Independent Variable	2017	2018	2019
% White	0.0217 (0.0233)	-0.0107 (0.0288)	-0.0175 (0.0305)
Median Inc	-0.002 (0.0019)	0.0005 (0.0024)	0.0008 (0.003)
Q1	0.1080*** (0.0148)	0.1583*** (0.0176)	0.1737*** (0.0203)
Q2	0.0451*** (0.0066)	0.0639*** (0.008)	0.0724*** (0.0101)
Q3	0.0278*** (0.0058)	0.0441*** (0.0073)	0.0550*** (0.0095)
Q4	0.0162*** (0.0047)	0.0270*** (0.0059)	0.0328*** (0.0082)
Chillicothe	-0.0209 (0.0178)	-0.0434 (0.0267)	-0.0392** (0.0197)
Columbia	-0.006 (.0138)	-0.0144 (0.0223)	0.0106 (0.0212)
Farmington	0.0267 (0.0218)	-0.0056 (0.02)	0.008 (0.015)

Hannibal	0.0177 (0.0302)	0.0074 (0.0422)	0.0037 (0.0192)
Jefferson City	-0.0048 (0.0173)	-0.0178 (0.0222)	0.0206 (0.0216)
Joplin	-0.0119 (0.0203)	-0.0331 (0.0243)	0.0133 (0.0341)
Kansas City Downtown	-0.0243 (0.02)	-.0555*** (0.0209)	-0.0329* (0.0187)
Kansas City East	0.0011 (0.0179)	-0.0221 (0.023)	0.0241 (0.027)
Kansas City North	-0.0133 (0.0128)	-0.0366* (0.02)	-0.006 (0.0187)
Kirksville	0.0088 (0.017)	-0.0191 (0.0261)	-0.0045 (0.0161)
Nevada	-0.0361** (0.0145)	-.0685*** (0.0212)	-0.0425** (0.017)
Rolla	0.0291 (0.0178)	0.0187 (0.0243)	0.0495* (0.0276)
Sedalia	-0.0178 (0.0134)	-0.0398** (0.0196)	-0.0173 (0.0138)
Spring North	-0.0162 (0.0136)	-0.0318* (0.0191)	-0.0087 (0.0155)
Spring South	-0.0129 (0.0146)	-0.0347* (0.0204)	-0.005 (0.017)
St Charles	-0.0188 (0.0136)	-0.0384** (0.018)	-0.0049 (0.0142)
St Joseph	-0.0366** (0.0145)	-.0640*** (0.0208)	-.0408*** (0.0158)
St Louis Downtown	-.0403*** (0.0149)	-.0814*** (0.0194)	-.0515*** (0.0181)
St Louis North	-0.0111 (0.0172)	-0.0390* (0.0221)	-0.0125 (0.0199)
St Louis South	-0.0037 (0.0122)	-0.0227 (0.018)	0.0077 (0.0161)
St Louis West	-0.0031 (0.0195)	-0.0293 (0.0233)	-0.0039 (0.0217)
West Plains	0.0108 (0.0189)	0.0017 (0.0217)	0.0079 (0.0145)
Constant	0.0188 (0.0205)	0.0566** (0.0255)	0.0293 (0.0254)
Observations	548	547	544
F	14.02	15.56	16.95

Adjusted R <sup>2</sup>	0.2923	0.3502	0.3730
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Note: Dependent variable is percentage of potentially eligible (PE) cases open at each high school. Cape Girardeau is the omitted district office. Quintile 5 is the omitted quintile group. Robust standard errors are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

In sum, when examining the relationship between independent variables to the percentage of potentially eligible students at each high school, holding all other variables constant, the results of model (8) present consistent coefficients across each of the three years. While some coefficients did move in and out of their range of statistical significance, the direction and magnitude of the relationship remained relatively consistent. This suggests that, overall, a relatively similar local level potentially eligible service roll-out strategy was employed year over year during the years for which data were available (2017-2019). It's important to remember that 2017 was actually the third year of the existence of the programs and services for potentially eligible students, so there is a chance that, by the third year, established patterns and practices, which were developing during 2015 and 2016, had become routine. Had data been available to evaluate 2015 and 2016 we would have likely seen different patterns emerge for those earliest two years of program implementation. Additionally, we can see that when comparing coefficients from the zero-order models to the full model, the coefficients for percentage white and median household income lost their significance and moved closer toward zero in magnitude indicating that the initial effects of race and income characteristics were actually explained by the other variables controlled for in the full model. We also see that the dummy variables representing the total high school enrollment quintile continued to be statistically significant, and even increased in magnitude in the full model. We can also see that the number of district office dummy

variables that were statistically significant was reduced when comparing the coefficients of model (7) to model (8), and we see the highest magnitude of change in the coefficients representing VR district offices occurred in the Kansas City and St. Louis metro regions with the much more rural Chillicothe region serving as somewhat of an outlier. The fact that the coefficients shifted so significantly in the metro regions of the state can likely be explained by the strong influence that high school enrollment size seems to be having on the percentage of potentially eligible participants at each high school. Metro areas tend to have high schools with larger enrollment as compared to high schools in non-metro areas of the state, so while we see some effects of VR district office on percentage of enrollment, it is perhaps the size of the high school that is exerting the most influence on the percentage of potentially eligible participants at each high school.

Overall, the results presented suggest that the ability of the services and programs designed to serve the potentially eligible high school students was strongly influenced by the size of the high school and possibly also other unmeasured characteristics of the high school's assigned VR district office during the first three years for which data were available. In other words, the size of the high school that a student attended and the region of the state that he or she resided in seems to have had an effect on the likelihood of that student participating as a potentially eligible student. Perhaps with limited staff to engage with the potentially eligible service providers and, in higher enrollment schools, a greater number of students to consider referring, it became increasingly difficult for high school staff to refer a comparable proportion of

students. It is not surprising to see variation in the rollout of such a program across such a large and diverse state. With multiple providers de-centralized in their service delivery approaches, the influence of unmeasured school-level and staff-level factors could certainly impact the degree to which students became potentially eligible participants.

*How do local factors associated with Missouri's public and charter high schools influence access to VR eligible services for high school students with disabilities?*

In practice, the local VR counselor is directly involved in receiving new referrals and assumes responsibility for providing services to VR eligible students. This practical difference in the nature of who is responsible for providing services to each case type (PE or VR) is important for understanding the influence of key local factors on the participation rates of high school students receiving VR eligible services. While the nature of the relationship between key independent variables is similar to that when the percentage of potentially eligible participants is the dependent variable, the role of the VR district office should be viewed differently. While potentially eligible service providers are not directly influenced by factors associated with the VR district office, the effects of practices occurring within the VR district office do affect the practices of the VR counselor serving local participants. Ordinary least squares modeling was utilized to better understand the relationship between key local demographic characteristics and the degree to which those characteristics influenced the percentage of students who received services as a VR eligible student. Given the large sample size (N=32,761), ordinary least squares modeling should produce robust estimates of standard errors. In order to deal with heteroskedacity, robust estimates of standard errors will be used.

Additionally, analyses were conducted for each program year separately in an effort to better understand how the newly developed extra-organizational services for potentially eligible students may have influenced the relationship between important local-level characteristics and the percentage of high school students with disabilities receiving services as VR eligible participants. Results from five ordinary least squares models are presented in order to better understand the relationship between key local level characteristics and the percentage of VR eligible students among all students with disabilities who participated at each high school each year 2013-2019.

$$\text{Model (9): } \%VR = \beta_0 + \beta_1(\%White) + \mu$$

$$\text{Model (10): } \%VR = \beta_0 + \beta_1(\text{Median Income}) + \mu$$

$$\text{Model (11): } \%VR = \beta_0 + \beta_1^j + \mu$$

$$\text{Model (12): } \%VR = \beta_0 + \beta_1^k + \mu$$

$$\text{Model (13): } \%VR = \beta_0 + \beta_1(\%White) + \beta_2(\text{Median Income}) + \beta_3^j + \beta_4^k + \mu$$

*Note: j = dummy variables for high school enrollment quintiles. k = dummy variables for the VR district office.*

Table 32 describes the variables included in models (9-13) and table 26 above provides mean values and standard deviation of dependent and independent variables used in models (4-13) by year.



*Table 32: Models (9-13) Dependent and Independent Variables*

Variable	Coding Description
<u>Dependent Variable</u>	
% VR	number of VR eligible participants divided by the total student enrollment at each high school
<u>Independent Variables</u>	
% White	% of residents who are white within the high school building zip code
Median Income	median household income within the high school building zip code
VR D.O.	VR District Office assigned to serve high school; 22 dummy variables for 23 districts; 1=high school is assigned; 0 = high school is not assigned
Q1-Q5	High school enrollment quintile; 4 dummy variables for 5 quintiles; 1 = high school enrollment falls within the quintile; 0 = high school enrollment does not fall within the quintile

As in the previous section, year-to-year comparisons of the results of each model in this section will be discussed separately so as to first develop an understanding of the relationship of each of the independent variables with the percentage of VR eligible participants at each high school over time, before ultimately evaluating the results of the full model and drawing conclusions.

Model (9)

Table 33 provides results of model (9) as specified above for each of the years 2013 through 2019. When the percentage of white residents was the lone predictor variable, we see coefficients that were not statistically significant in 2013 and 2014 and then shifted to become increasingly stronger in magnitude, positive, and statistically significant beginning in 2015 and running through 2018, before decreasing slightly in magnitude in 2019. These results suggest that beginning in 2015 a student who attended a high school that was located within a zip code with a higher percentage of white residents was more likely to be a VR eligible participant than a student who attended a high school in a zip code where the percentage of white residents was lower, and for the most part the strength of that relationship grew with each passing year. While the coefficients were statistically significant for the years 2015-2019, each of the models explained a small amount of the variance associated with the dependent variable.

Table 33: Model (9) Results

Dep. Variable: % VR							
Ind. Variable	2013	2014	2015	2016	2017	2018	2019
% White	-0.0031 (0.0035)	-0.0036 (0.0069)	0.0162** (0.0069)	0.0187*** (0.0068)	0.0215*** (0.0082)	0.0247*** (0.0092)	0.0243*** (0.0078)
Constant	0.0146*** (0.0032)	0.0293*** (0.0063)	0.0214*** (0.006)	0.0212*** (0.0059)	0.0256*** (0.0073)	0.0272*** (0.0082)	0.0187*** (0.0071)
Observations	537	541	542	541	548	547	544
F	0.78	0.27	5.49	7.53	6.83	7.26	9.75
Adjusted R <sup>2</sup>	0.0013	-0.0016	0.0028	0.0018	0.0005	0.0004	0.0011

Note: Dependent variable is percentage of eligible (VR) cases open at each high school. Robust standard errors in parentheses, \*\*\*  $p < 0.01$  and \*\*  $p < 0.05$ .

### Model (10)

Table 34 provides results of model (10) as specified above for each of the years 2013 through 2019. When the median household income of the zip code in which the high school resides was the lone predictor variable, we see that the coefficients were very close to zero and that none of the models were statistically significant at the  $p < .10$  level. These results indicate that median household income did not have a meaningful relationship with whether or not a student was an eligible VR participant during the years 2013-2019.

Table 34: Model (10) Results

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Dep. Variable: % VR

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Ind. Variable	2013	2014	2015	2016	2017	2018	2019
Median Income	0.0006 (0.0009)	-0.001 (0.0009)	-0.0014 (0.0009)	-0.0005 (0.0011)	0.00001 (0.0017)	0.0011 (0.0022)	0.0012 (0.0017)
Constant	0.0092** (0.0036)	0.0304*** (0.0042)	0.0423*** (0.0047)	0.0402*** (0.0058)	0.0448*** (0.0087)	0.0433*** (0.0114)	0.0340*** (0.0088)
Observations	537	541	542	541	548	547	544
F	0.48	1.21	2.47	0.21	0.00	0.27	0.52
Adjusted R <sup>2</sup>	0.0005	-0.0004	0.0008	-0.0017	-0.0018	-0.0014	0.0012

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Note: Dependent variable is percentage of eligible (VR) cases open at each high school. Robust standard errors in parentheses, \*\*\* =  $p < .01$  and \*\* =  $p < .05$

### Model (11)

Table 35 provides results of model (11) as specified above for each of the years 2013 through 2019. When a dummy variable indicating the high school enrollment quintile group was the lone predictor variable, we see models that explained a much

greater portion of the variance associated with the dependent variable as compared to models (9) and (10). Additionally, the results of each of the models in table 35 describe a strictly monotonic relationship between high school enrollment and the dependent variable. Across every year we can see that the magnitude of the relationship increased for each model as we moved from quintile 4 to quintile 1, as compared to the omitted group, indicating that the percentage of VR eligible high school participants was greater in high schools with lower enrollment. Additionally, all coefficients describe a statistically significant relationship between each enrollment quintile and the percentage of VR eligible participants at each high school as compared to the omitted quintile group, which represents schools with the highest enrollment. We can also see that across quintiles the magnitude of the relationship strengthened as we moved from 2013 to 2017, and then for all quintiles, except for quintiles 3 and 4 it strengthened from 2017 to 2018, and then decreased in magnitude for all quintiles as we move from 2018 to 2019. As was the case when the dependent variable was the percentage of potentially eligible participants at each high school, staff at lower enrollment high schools seemed to be referring students for VR eligible services at a higher rate than the high schools with higher enrollment numbers.

Table 35: Model (11) Results

Dep. Variable: % VR							
Ind. Variable	2013	2014	2015	2016	2017	2018	2019
Q1	0.0142*** (0.0042)	0.0270*** (0.0064)	0.0349*** (0.007)	0.0425*** (0.0098)	0.0660*** (0.0147)	0.0751*** (0.0175)	0.0612*** (0.0149)
Q2	0.0027* (0.0014)	0.0120*** (0.0031)	0.0126*** (0.0032)	0.0152*** (0.0033)	0.0184*** (0.0034)	0.0188*** (0.0036)	0.0149*** (0.0032)
Q3	0.0025** (0.0011)	0.0048** (0.0019)	0.0088*** (0.0028)	0.0111*** (0.0031)	0.0125*** (0.0032)	0.0124*** (0.0034)	0.0096*** (0.0033)
Q4	0.0016* (0.0009)	0.0054*** (0.0016)	0.0063*** (0.0022)	0.0065*** (0.0022)	0.0075*** (0.0026)	0.0075*** (0.0028)	0.0070*** (0.0025)
Constant	0.0076*** (0.0005)	0.0161*** (0.0009)	0.0232*** (0.0012)	0.0227*** (0.0012)	0.0236*** (0.0012)	0.0263*** (0.0014)	0.0217*** (0.0013)
Observations	537	541	542	541	548	547	544
F	4.55	9.61	10.96	12.07	14.86	13.23	10.95
Adjusted R <sup>2</sup>	0.0458	0.0628	0.0813	0.0714	0.0869	0.0839	0.0764

Note: Dependent variable is percentage of eligible (VR) cases open at each high school. Quintile 5 is the omitted reference group. Robust standard errors are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

*Model (12)*

Table 36 provides results of model (12) as specified above for each of the years 2013-2019, where VR district office dummy variables served as the lone predictor variables. First, we see models that on average explained a greater proportion of the variance associated with the dependent variable than models (9), (10), or (11). When evaluating the change in coefficients across the years for specific VR district offices, we see many statistically significant coefficients across multiple district offices. A few particularly interesting results stand out. First, we see that high schools associated with the Chillicothe, Kirksville, and St. Joseph district offices maintained a statistically significant and positive relationship with the percentage of VR eligible participants as

compared to the omitted group across all years. Additionally, we see that the magnitude of the relationship increased year over year to the strongest point in 2018. We also see an interesting pattern emerge among the Columbia, Nevada, Rolla, and St. Charles district offices wherein statistically significant positive relationships as compared to the omitted group emerged shortly after the introduction of the extra-organizational policy response in the years 2017 and persisted through 2019. Collectively, these results suggest that the effects of the services for potentially eligible students being available in local high schools across the state was not experienced equally. As the VR counselor is responsible for enrolling new VR eligible participants into service, the variation across offices and the evidence supporting the changes in the relationship between participation rates across and within some VR district offices, around the time that the new potentially eligible services became available, is an indicator of the presence of some unmeasured influence associated with district.

*Table 36: Model (12) Results*

Dep. Variable: % VR							
Ind. Variable	2013	2014	2015	2016	2017	2018	2019
Chillicothe	0.0129*** (0.0044)	0.0354*** (0.0081)	0.0539*** (0.011)	0.0511*** (0.016)	0.0651*** (0.0188)	0.0729*** (0.0168)	0.0719*** (0.0131)
Columbia	0.0088 (0.0061)	0.0224 (0.0159)	0.0117 (0.0073)	-0.0009 (0.007)	0.0150* (0.0081)	0.0282*** (0.0081)	0.0289*** (0.0058)
Farmington	-0.0018 (0.002)	0.001 (0.0032)	-0.0032 (0.0037)	-0.0125** (0.0053)	-0.0025 (0.0075)	-0.0016 (0.0051)	0.0016 (0.0038)
Hannibal	0.0000 (0.0026)	0.0111 (0.0071)	0.0097 (0.0082)	0.001 (0.0093)	0.0127 (0.0106)	0.0327 (0.0242)	0.0094 (0.0059)
Jefferson City	0.0147 (0.0092)	0.0258* (0.0139)	0.0290** (0.0142)	0.0315 (0.0261)	0.0263 (0.0251)	0.0221 (0.0152)	0.0215* (0.0115)
Joplin	0.002 (0.0046)	0.0053 (0.0075)	0.0039 (0.0113)	-0.0046 (0.0118)	0.0291 (0.0366)	0.0569 (0.0534)	0.0504 (0.0446)

KCDT	0.0025 (0.0028)	0.004 (0.0044)	-0.0065 (0.0044)	-0.0125* (0.0068)	-0.0027 (0.009)	0.0119 (0.0108)	0.0141** (0.0055)
KC East	0.0090* (0.0049)	0.0152** (0.0063)	0.0094 (0.0061)	0.0002 (0.0068)	0.0171 (0.0126)	0.0313 (0.0224)	0.0242 (0.0176)
KC North	0.0016 (0.0021)	0.0041 (0.0037)	0.0001 (0.0047)	-0.0084 (0.0056)	0.0249 (0.029)	0.0254 (0.0242)	0.0264 (0.0184)
Kirksville	0.0240*** (0.0086)	0.0580*** (0.0142)	0.0678*** (0.014)	0.0702*** (0.0148)	0.0865*** (0.0161)	0.0973*** (0.0205)	0.0894*** (0.0172)
Nevada	-0.0006 (0.002)	0.0069* (0.0037)	0.0053 (0.0049)	-0.0013 (0.0059)	0.0111 (0.0069)	0.0149*** (0.0053)	0.0138*** (0.0048)
Rolla	0.0026 (0.0024)	0.0058 (0.0037)	0.0088* (0.0051)	0.0093 (0.0077)	0.0191** (0.0092)	0.0224*** (0.0085)	0.0239*** (0.0081)
Sedalia	-0.0007 (0.0022)	0.0112** (0.0048)	0.0138* (0.0075)	0.0018 (0.0078)	0.0095 (0.0083)	0.0105 (0.0067)	0.0095** (0.0041)
Spring North	0.0016 (0.0023)	0.0058* (0.0034)	0.0034 (0.0041)	-0.0134*** (0.0051)	-0.0066 (0.0057)	-0.001 (0.0042)	0.0004 (0.003)
Spring South	0.0001 (0.0019)	0.0067** (0.0033)	-0.0012 (0.0039)	-0.0146*** (0.0052)	-0.0075 (0.006)	0.0006 (0.005)	0.0029 (0.0039)
St Charles	0.0165 (0.0152)	0.0153 (0.0113)	0.0055 (0.0068)	0.0041 (0.0122)	0.0066 (0.0069)	0.0132*** (0.0049)	0.0208*** (0.0045)
St Joe	0.0064** (0.0027)	0.0269*** (0.0057)	0.0376*** (0.009)	0.0286*** (0.0098)	0.0675*** (0.0244)	0.0837*** (0.0309)	0.0809*** (0.0284)
St Louis DT	0.0021 (0.0024)	0.0096* (0.0052)	0.0049 (0.0074)	-0.0069 (0.0079)	-0.0051 (0.0071)	-0.0063 (0.0058)	-0.0026 (0.0044)
St Louis North	-0.0017 (0.0016)	-0.0042** (0.0021)	-0.0061* (0.0035)	-0.0162*** (0.0051)	-0.0150*** (0.0058)	-0.0067** (0.0029)	0.003 (0.0029)
St Louis South	-0.0002 (0.0022)	0.0007 (0.003)	0.001 (0.0052)	-0.0087 (0.0059)	-0.0032 (0.0062)	0.003 (0.0046)	0.0129* (0.0077)
St Louis West	0.0073*** (0.0028)	0.0188*** (0.0056)	0.0116* (0.0062)	-0.0019 (0.0064)	0.0000 (0.0067)	0.0091 (0.0059)	0.0178** (0.0073)
West Plains	0.0041 (0.0037)	0.0088 (0.0056)	0.0066 (0.0059)	0.0091 (0.0069)	0.0133* (0.0076)	0.0171** (0.0069)	0.0218*** (0.0072)
Constant	0.0070*** (0.0013)	0.0124*** (0.002)	0.0227*** (0.0028)	0.0318*** (0.0046)	0.0275*** (0.0052)	0.0249*** (0.0029)	0.0160*** (0.002)
Observations	537	541	542	541	548	547	544
F	2.39	8.48	5.14	6.22	6.15	9.66	6.32
Adjusted R <sup>2</sup>	0.0371	0.0829	0.1531	0.1106	0.0678	0.0613	0.181

Note: Dependent variable is percentage of eligible (VR) cases open at each high school. Cape Girardeau is the omitted reference group. Robust standard errors are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

*Model (13)*

Table 37 provides results of model (13) as specified above for each of the years 2013 through 2019. Model (13) is the “full” model, which includes results of the relationship between each of the previously described independent variables, while controlling for the others, predicting the percentage of VR eligible participants at each high school. When comparing the relationship between the zero-order models and the full model, we can see that the coefficients for the percentage of white residents shifted from positive in the latter half of the zero-order model years to negative and statistically significant in the full model in years 2013, 2016, 2017, and 2018. The significant change in direction of the relationship is an indicator that the influence of other independent variables on the percentage of VR participants was strong, and that such influences explained the observed positive relationship observed between the percentage of white residents and the dependent variable in the bivariate regression. In terms of median household income, we saw no statistically significant coefficients in the zero-order model, but in the full model we saw a statistically significant and positive relationship in 2018, which indicates that during that year as the median income of the households in which a high school was located increased (controlling for other variables), so did the likelihood that a student would be a VR eligible participant. Additionally, the magnitude of the coefficients becomes stronger across most years for median household income in the full model as compared to the zero-order model. When we evaluate the results associated with the high school enrollment quintiles we see similar patterns emerge as we have seen in prior models, namely a positive and statistically significant relationship



across all quintiles and all years as compared to the omitted group, as well as a general trend toward a stronger relationship as the years progress. One interesting comparison to note is that with the exception of the first quintile, the magnitude of the coefficients is higher in the full model as compared to the zero-order model. Additionally, we see the magnitudes of coefficients increase around the time of the introduction of the services for potentially eligible students becoming available, signaling potential changes in how high schools were referring students to VR counselors. In terms of VR district office effects within the full model, we see that each of the statistically significant coefficients was positive as compared to the omitted group regardless of the year. Additionally, the Kirksville district office maintained a positive and statistically significant relationship across all years with the dependent variable as compared to the omitted group while holding all other variables constant. The Chillicothe and St. Joseph district offices maintained a statistically significant and positive relationship with the dependent variable, controlling for all other variables, as compared to the omitted group across all years except for the first year (2013). We can also see that 12 out of the 22 district offices (Columbia, Hannibal, Jefferson City, Kansas City East, Kansas City North, Rolla, Sedalia, Springfield South, St. Charles, St. Louis South, St. Louis West, and West Plains) had a statistically significant and positive relationship with the dependent variable, controlling for all other variables, as compared to the omitted group for multiple years within the seven-year time frame for which data were available. Among the 12 aforementioned district offices, three (Sedalia, Springfield North, and St. Louis West) demonstrated a statistically significant and positive relationship in either or both of the

years prior to 2015, which represented the earliest year of the introduction of the services to the potentially eligible, and then never revealed a statistically significant relationship at any point thereafter through 2019. One district office (Kansas City Downtown) demonstrated the reverse, not having a statistically significant relationship in years 2013 or 2014 and then by 2019 having a statistically significant and positive relationship with the dependent variable. In general, the strength of the coefficients associated with the VR district office variables increased over time. Additionally, when we compare the magnitude of the coefficient change among VR district offices moving from model (12) to model (13), we see that the St. Louis South and St. Charles district offices experienced the largest coefficient magnitude shifts across all years although the magnitude of the shift was relatively weak.

*Table 37: Model (13) Results*

Dep. Variable: % VR							
Ind. Variable	2013	2014	2015	2016	2017	2018	2019
% White	-0.0137* (0.0079)	-0.0199 (0.0124)	-0.0039 (0.0117)	-0.0230* (0.0132)	-0.0503** (0.0201)	-0.0579** (0.0245)	-0.0282 (0.0234)
Median Income	0.001 (0.001)	-0.0006 (0.001)	-0.001 (0.0012)	0.0019 (0.0015)	0.0032 (0.0021)	0.0055* (0.0029)	0.0025 (0.0021)
Q1	0.0186*** (0.0068)	0.0255*** (0.0077)	0.0234*** (0.0076)	0.0310*** (0.0106)	0.0593*** (0.0187)	0.0744*** (0.0231)	0.0581*** (0.0188)
Q2	0.0087** (0.0035)	0.0147*** (0.0044)	0.0105** (0.0045)	0.0140*** (0.0047)	0.0234*** (0.0076)	0.0289*** (0.009)	0.0219*** (0.0077)
Q3	0.0083** (0.0034)	0.0082** (0.0035)	0.0066* (0.0039)	0.0078* (0.0042)	0.0181** (0.0072)	0.0237*** (0.0088)	0.0188*** (0.0069)
Q4	0.0046* (0.0027)	0.004 (0.0029)	0.0025 (0.0033)	0.0039 (0.0039)	0.0111* (0.0063)	0.0159** (0.0075)	0.0125** (0.0058)
Chillicothe	0.0082 (0.005)	0.0303*** (0.0087)	0.0470*** (0.011)	0.0424*** (0.0158)	0.0480** (0.0196)	0.0495*** (0.0191)	0.0555*** (0.0148)

Columbia	0.0091 (0.0057)	0.0258* (0.0154)	0.0150** (0.0075)	-0.0001 (0.0082)	0.0158 (0.0105)	0.0250** (0.0118)	0.0304*** (0.0098)
Farmington	0.001 (0.0025)	0.0058 (0.0043)	0.0001 (0.0047)	-0.0082 (0.006)	0.006 (0.0082)	0.0058 (0.0079)	0.0098 (0.0067)
Hannibal	0.0008 (0.0029)	0.0144** (0.0068)	0.012 (0.0078)	0.0037 (0.0093)	0.0178* (0.0104)	0.0315 (0.0222)	0.0142* (0.0076)
Jefferson City	0.0154* (0.009)	0.0296** (0.0141)	0.0324** (0.0145)	0.0339 (0.027)	0.0284 (0.0256)	0.021 (0.0161)	0.0247** (0.0125)
Joplin	0.0051 (0.0046)	0.0109 (0.0077)	0.0084 (0.0114)	0.0011 (0.0117)	0.0387 (0.0369)	0.0669 (0.0539)	0.0599 (0.0455)
KCDT	-0.0003 (0.004)	-0.0011 (0.0072)	-0.0039 (0.0066)	-0.0132 (0.0083)	-0.0107 (0.0122)	0.0059 (0.012)	0.0169* (0.0094)
KC East	0.0116** (0.0049)	0.0229*** (0.007)	0.0185** (0.0077)	0.0035 (0.0076)	0.0219* (0.0117)	0.0337* (0.019)	0.0340** (0.0162)
KC North	0.005 (0.0032)	0.0145*** (0.0054)	0.0095 (0.0065)	-0.0046 (0.0071)	0.0327 (0.0264)	0.0299 (0.0217)	0.0353** (0.0172)
Kirksville	0.0227*** (0.0081)	0.0577*** (0.0136)	0.0665*** (0.0138)	0.0684*** (0.0141)	0.0792*** (0.0154)	0.0866*** (0.0201)	0.0839*** (0.0171)
Nevada	-0.0001 (0.0025)	0.0088* (0.0049)	0.0067 (0.0056)	-0.0003 (0.0064)	0.0122 (0.0079)	0.0135* (0.0078)	0.0143** (0.0065)
Rolla	0.0048 (0.0031)	0.0117** (0.0049)	0.0134** (0.0063)	0.0159* (0.0087)	0.0283** (0.0112)	0.0322*** (0.0117)	0.0325*** (0.0107)
Sedalia	-0.0004 (0.0027)	0.0134** (0.0052)	0.0154** (0.0073)	0.0043 (0.0079)	0.0134 (0.0093)	0.0124 (0.0089)	0.0103 (0.0066)
Spring North	0.004 (0.0028)	0.0103** (0.0041)	0.0066 (0.0044)	-0.0084 (0.0057)	0.0041 (0.0076)	0.0092 (0.0074)	0.0093 (0.0065)
Spring South	0.003 (0.0024)	0.0130*** (0.0042)	0.0043 (0.0044)	-0.0074 (0.0058)	0.004 (0.0075)	0.0125* (0.0074)	0.0134** (0.0067)
St Charles	0.0212 (0.0147)	0.0269** (0.011)	0.0166** (0.0073)	0.0105 (0.0119)	0.0183** (0.0087)	0.0214** (0.0104)	0.0332*** (0.0089)
St Joe	0.0042 (0.0032)	0.0258*** (0.006)	0.0356*** (0.0088)	0.0244** (0.0095)	0.0597** (0.0232)	0.0737** (0.0289)	0.0737*** (0.0267)
St Louis DT	-0.0017 (0.0042)	0.008 (0.008)	0.0099 (0.0091)	-0.0064 (0.0103)	-0.0125 (0.0111)	-0.0158 (0.0103)	-0.0024 (0.01)
St Louis North	0.0011 (0.0035)	0.0024 (0.0065)	0.0049 (0.0072)	-0.0140* (0.0081)	-0.0138 (0.0112)	-0.0074 (0.0131)	0.0136 (0.013)
St Louis South	0.0063** (0.0027)	0.0140*** (0.0042)	0.0125** (0.0057)	0.0008 (0.0073)	0.0161* (0.0095)	0.0199** (0.0099)	0.0297*** (0.0101)
St Louis West	0.0084** (0.004)	0.0241*** (0.0079)	0.0201** (0.0086)	-0.0009 (0.0083)	-0.0006 (0.0108)	0.0038 (0.0118)	0.0227* (0.0131)
West Plains	0.0067 (0.0042)	0.0112* (0.0065)	0.0075 (0.0069)	0.0138* (0.0079)	0.0222** (0.0101)	0.0285*** (0.0108)	0.0301*** (0.0099)
Constant	0.0057 (0.0053)	0.0190* (0.0099)	0.0190* (0.0106)	0.0299*** (0.0113)	0.0317** (0.0146)	0.0194 (0.0174)	0.0022 (0.0158)

Observations	537	541	542	541	548	547	544
F	2.5	4.25	5.33	8.67	5.25	3.89	4.4
Adjusted R <sup>2</sup>	0.0856	0.1275	0.1786	0.1347	0.113	0.1143	0.1233

Note: Dependent variable is percentage of eligible (VR) cases open at each high school. Cape Girardeau is the omitted district office. Quintile 5 is the omitted quintile group. Robust standard errors are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

When evaluating the results of model (13) a few noteworthy observations stand out. First, as seen with model (8), when the dependent variable was the percentage of potentially eligible students at each high school, the results of model (13) suggest that access to VR eligible services for high school students was strongly influenced by the student enrollment of the high school; the high schools with lower overall enrollment numbers were more likely to have a VR eligible participant than high schools with higher student enrollment numbers across all years. However, those coefficients increase in magnitude for quintiles 2, 3, and 4, as compared to quintile 5, when control variables are introduced, suggesting that the influence of race and perhaps other, unaccounted for VR district office level characteristics are having some influence. Additionally, we see changing results when comparing coefficients across each of the years, particularly around and after the time of the introduction of the services to potentially eligible students. As reported, the coefficients representing the percentage of white residents in a high school's zip code becomes stronger in 2016, the strength of the relationship between the enrollment quintiles tends to be stronger as time progresses, and the strongest coefficients describing the relationship between many of the VR district offices occur in the years 2017 and beyond. While not all VR district offices were influenced to the same degree, we can see evidence that several district offices

experienced some degree of shift in the nature of their relationship with the dependent variable around the time of the introduction of services for the potentially eligible students. Overall, in previous sections of this chapter we saw aggregate-level descriptive statistics and analyses suggesting that the introduction of the services for the potentially eligible students disrupted how VR participants entered into VR services. The results of model (13) more clearly isolate the relationship that specific factors such as high school student enrollment and VR district office had on the dependent variable and provide additional evidence to support the influence of the introduction of the extra-organizational services designed for potentially eligible students on how students access VR eligible services.

### **Chapter Summary**

Results described throughout Chapter V demonstrate that Missouri VR's extra-organizational policy response achieved exactly what it was designed to do, namely significantly increased the number of high school students who received some type of VR service, and provide services to potentially eligible students earlier in their high school career as compared to VR eligible participants. Even though the new potentially eligible services and programs were designed to be delivered by third party providers, the organization as a whole absorbed a substantial amount of new work. Beyond the expected aforementioned results, several important results emerged that begin to highlight details about the degree to which the selected policy response impacted high school student access to VR services in perhaps unexpected ways. We can see from the results provided in this chapter evidence to support the notion that Missouri VR's

introduction of new services to potentially eligible students may have disrupted the process by which high school students became VR eligible participants, although it didn't seem to disrupt the volume of students receiving services under an IPE.

Additionally, while not all potentially eligible students want or need VR eligible services, the results clearly point to the fact that the vast majority of the potentially eligible students being served were not subsequently accessing VR eligible services.

Additionally, the potentially eligible students were more likely to be male and white when compared to VR eligible students, which suggests possible inequities in the high schools who engaged with the roll-out of the new programs and services. It's not clear from the data whether these effects were due to characteristics of the third-party providers, high schools, or something else. We also saw evidence of a disruption in the demographic characteristics of the high school students accessing VR eligible services about the time that the services for potentially eligible were introduced. Lastly, several interesting results point to the importance of characteristics of the high school as it relates to referral patterns for VR services. Specifically, we saw evidence of differences in the disability characteristics of students accessing potentially eligible and VR eligible services, which could be an indicator that high school staff are referring certain types of students for PE services and other types for VR services. We also see significant effects of the high school enrollment size on potentially eligible and VR eligible student's participation rates. Lastly, the VR district seems to matter as evidenced by the across region variation in relationship to the dependent variable. These results could be

associated with effects occurring at the high school level, but could also be effects of changes in practice by VR counselors.

## **Chapter VI**

### **Discussion**

Public organizations often respond to the same policy changes in varied and seemingly unpredictable ways. The unpredictable nature of these responses is problematic where consistency in public policy results are concerned. As described by Winter and Nielsen in their Integrated Implementation model (2012) the public policy implementation process is complex, involving many inter-related factors that can influence policy results. This study contributes to the public policy implementation literature base by isolating the role that organizational behavior plays in how organizations respond to policy change. More specifically, the purpose of this study was to understand how, through the lens of contingency theory, one public organization developed new extra-organizational service delivery structures in response to significant changes in the policy environment, and in turn how those structural changes impacted policy-relevant performance. This chapter will start by briefly revisiting the research question and sub-questions and then highlight the results presented in Chapters IV and V. Next, this chapter will offer an interpretation of the results, comparing and relating the qualitative and quantitative findings and explaining how the results answer the research question. This chapter will then describe how the interview data extend support for key aspects of structural contingency theory, namely how significant policy changes impacted organizational structure through the channels of uncertainty as well as suggesting the important role that other factors such as discretion may have played in explaining policy-relevant performance outcomes. Additionally, quantitative analyses



relying on administrative data will describe how the organization's structural response to the policy change contributed to both expected and unexpected policy-relevant performance outcomes. The final sections of this chapter will describe the limitations of the study, offer suggestions for future research, and conclude with an overall summary of conclusions.

### **Research Questions**

This mixed methods case study relied on qualitative and quantitative data to address the following research question and sub-questions:

*Overarching Research Question:* How do changes in the policy environment influence organizational structure and subsequent policy-relevant performance?

*Sub-questions:*

- 1) What factors explain Missouri VR's structural response?
- 2) How did Missouri VR's structural response affect policy-relevant performance?

### **Key Qualitative Results**

The results presented in Chapter IV describe an initial high degree of uncertainty on the part of Missouri VR's program designers in terms of how to comply with the new policy mandate to make pre-employment transition services available to all potentially eligible students with disabilities across Missouri. The uncertainty allowed for, and in many ways required, discretion among Missouri VR's decision-makers to decide how they would ultimately balance compliance with the policy mandates while protecting

key aspects of the organization that they deemed most important. The result was the development of the largely extra-organizational structural response described in Chapter I, which was designed to make available the five required pre-employment transition services and serve the state's potentially eligible students while attempting to protect established practices and processes of the organization. Interviews with staff operating at the local level describe a period of uncertainty as well. Initially it was unclear to staff how these new programs and services would be assimilated into the existing workload and local practices, even if they were designed to be delivered by someone else. The responses of those interviewed also point to local level staff having a high degree of autonomy and discretion in how they chose to assimilate these new programs and local partners into their work. This autonomy seems to have contributed to the establishment of variation in local practices early on in the implementation process, which seem to have persisted over the course of the years following WIOA's enactment. In sum, the interview data describe two related but distinct aspects of the policy implementation behavior of organizational actors driven by the uncertainty generated from the policy mandate. First, at the program design level where task uncertainty in terms of how to comply was high, Missouri VR's program designers sought to comply with the mandate to provide pre-employment transition services to potentially eligible students while exercising their discretion to protect aspects of the organization that they deemed were important. Second, at the local implementation level, staff reported the extra-organizational design added complexity by adding new partners into the mix and also required they exercise discretion in decision-making due

to their uncertainty about how to best integrate the new programs and partners into their existing work. Task uncertainty appears to have played a causal role via its influence on discretionary practices in the variation in services provided to VR eligible students when comparing policy-relevant data prior to and after the introduction of the policy response, as well as variation in how the programs and services for potentially eligible students were implemented.

### **Key Quantitative Results**

Results described throughout Chapter V show that Missouri VR's extra-organizational policy response in many ways achieved exactly what it was designed to do; dramatically increasing the total number of high school students who received some type of VR service and engaged with potentially eligible high school students at a younger age as compared to eligible students. However, several unexpected policy-relevant results emerged as well. First, we saw evidence that Missouri VR's introduction of new services to potentially eligible students may have disrupted the process by which high school students became VR eligible participants, although not necessarily the volume of students receiving services under an IPE. Additionally, the results demonstrated that in the earliest days for which data were available the vast majority of the potentially eligible students being served were not subsequently accessing VR eligible services. We also saw that the potentially eligible students were more likely to be male and white when compared to VR eligible students, as well as evidence of differences in the disability characteristics of students accessing potentially eligible and

VR eligible services. Lastly, the results presented suggest that access to services for the potentially eligible and VR eligible students was influenced by the enrollment of the high school and the district office territory with which the high school was associated.

Collectively, these important findings speak to possible unexpected changes in local-level behavior caused by the introduction of the extra-organizational response.

### **Interpretation of Results**

Separately the qualitative and quantitative results presented in Chapters IV and V answer the two research sub-questions: *What factors explain Missouri VR's structural response?* and *How did Missouri VR's structural response affect policy-relevant performance?* This section will offer interpretations of the results previously presented and unite them via discussion involving aspects of organization theory and the policy implementation literature discussed in Chapter II, as well as suggest the important role that discretion on the part of organizational actors played in explaining the policy-relevant performance results. By relating the results of both Chapters IV and V this chapter will seek to address the overarching research question: *How do changes in the policy environment influence organizational structure and subsequent policy-relevant performance?*

### *Fit*

We can see that the new performance expectations (making pre-employment transition services available to all potentially eligible students with disabilities) brought on by the environmental contingencies of the introduction of WIOA caused concerns

related to organizational misfit. Interview results with Missouri VR's program designers clearly describe the awareness amongst the organization's leaders that, barring changes in their service delivery design, they believed that they would be unable to meet the terms of the mandate as well as their own expectations and thus fall victim to performance concerns. Interview data revealed that Missouri VR was well-positioned to fashion a new structural response, which emphasized an interdependent relationship between Missouri VR and third-party service providers. Such an approach allowed Missouri VR to protect aspects of its organization, which it deemed to be important, namely avoiding overloading counselors and building on prior successes in serving high school students with disabilities. Evidenced by the results presented in Chapter V, we can see that Missouri VR's extra-organizational structural response led to the achievement of the stated policy goals as significantly more high school students with disabilities engaged in VR services at a younger age after the introduction of the new service programs as compared to the years before, but the added complexity of the response and uncertainty with how to assimilate the new strategies at the local level led to unexpected policy-relevant performance results.

### *Task Uncertainty*

Structural contingency theory allows us to use the qualitative and quantitative data presented in this study to dig deeper into better understanding causal factors associated with Missouri VR's decision to develop an extra-organizational structural response to the policy changes brought on by WIOA. While on one hand the high-level policy performance expectations were simple and straightforward, they seem to have

caused a high degree of task uncertainty amongst Missouri VR's leaders and program designers regarding how to formulate the organizational response. The results from the interview data presented in Chapter IV describe an initial high degree of uncertainty on the part of the program designers in terms of how to comply with the new policy mandate given the lack of additional resources made available to support compliance. Structural contingency theory posits that when task uncertainty is high, expertise and information get distributed among employees, which requires them to be empowered to use their initiative to make adaptive decisions (Donaldson, 2001). The interview data provided by the program designers illustrates the high degree of initial task uncertainty that existed in the earliest days of the organizational response post-WIOA. The initiative required of Missouri VR's program designers who were acting in an environment of uncertainty created an opportunity for Missouri VR's decision-makers to exert discretion over how they would balance compliance with the mandates of WIOA while at the same time protecting aspects of the organization that they deemed most important. While some discussion of specific policy-relevant performance expectations was discussed in the interviews, Missouri VR's program designers' view of performance seemed to be heavily focused on compliance with the mandate to make pre-employment transition services available to all potentially eligible students with disabilities statewide. Missouri VR's program designers appeared to exercise their discretion in order to develop a new organizational structural response that 1) protected existing infrastructure of the organization by avoiding overloading already busy counselors with more work, 2) leveraged existing resources that afforded a more seamless and quicker response and 3)

built upon its track record of past success in serving high school students. Each of these decisions were driven entirely by the discretionary practices occurring within Missouri VR as WIOA and RSA were silent in regards to expectations for dictating how VR agencies should respond.

Task uncertainty seemed to have a strong influence on staff operating at the local level as well. Beyond the uncertainty experienced by the program designers, staff at the local level experienced uncertainty in the sense that initially it was unclear how they would assimilate the newly designed programs and services into their existing workloads and the local partnership practices that had been developed. Managers and counselors alike reported initial reactions that described uncertainty and even concern with how this new extra-organizational approach would be absorbed by the organization's existing human resources. Task uncertainty seems to have contributed to a high degree of local discretion in how staff chose to assimilate these programs into their work. This was evidenced by the varied ways in which counselors described initially how they assimilated the new expectations into their daily workload early on and then how those practices evolved over the subsequent years.

### *Performance*

Because the implementation of such a significant policy change is not a point-in-time event but rather occurs over the course of months and even years, the full effects of these autonomous decisions can be difficult to assess and estimate. As described, Missouri VR's response to the significant policy changes was largely focused on policy-relevant performance as defined by the policy mandate (make pre-employment

transition services available to potentially eligible students with disabilities across the state). From a compliance perspective, we saw that the results described in Chapter V indicated that the structural response was successful in significantly expanding the availability of services to potentially eligible students with disabilities. Specifically, we saw a dramatic increase in the number of high school students, potentially eligible or eligible, who received some type of VR service after the introduction of the policy response. The ability of the organization's extra-organizational structural response to achieve compliance with the policy expectations of WIOA should not be surprising, as research has shown that a substantial portion of public programs rely on interorganizational arrangements to achieve policy goals (O'Toole and Meier, 2004 and O'Toole and Montjoy, 1984; Hall and O'Toole 2004; Agranoff, 2007). Additionally, this approach to achieving policy goals was not new for Missouri VR, which has a long-standing history of developing contractual relationships with third parties to deliver VR services and thus achieve its policy-relevant outcomes.

It is also important to consider the effects of the extra-organizational policy design itself. When programs are executed through actions that span multiple organizations, the capacity may be enhanced, but the implementation task becomes more complicated due to differing routines, languages, and distinct ways of seeing the world (O'Toole, 2012). As O'Toole and Meier (2004) surmise, such network arrangements can have a dark side, which managers and scholars alike need to consider. Their research shows that the creation of such networks adds a degree of complexity that doesn't exist in situations wherein an implementing organization is acting alone, as



the incorporation of additional perspectives can shift the policy emphasis during implementation. While some studies (Jaganath, 2020; Lundin, 2007) have shown how specific characteristics of partnering organizations (i.e., trust and goal congruence) can influence policy outcomes and results, the literature is scarce when it comes to studies that have demonstrated the influence of an extra-organizational policy response on policy-relevant outcomes.

Missouri VR's extra-organizational structural response was designed to achieve compliance, but at what cost? The autonomy and discretion afforded key decision makers in such high task uncertain environments can also lead to unexpected policy-relevant performance outcomes (Donaldson, 2001). When looking closely at the additional measures of policy-relevant performance that were the focus of this study (changes in statewide high school student access to, and receipt of, VR services prior to and after the introduction of the policy response; the degree to which potentially eligible students later became VR eligible participants; and changes in the demographic and local high school characteristics of high school students receiving VR services prior to and after the introduction of the policy response) we saw several unexpected results described in Chapter V. As mentioned, we saw evidence to support the notion that Missouri VR's introduction of new services to potentially eligible students may have disrupted the process by which high school students became VR eligible participants. Additionally, while not all potentially eligible students wanted or needed VR eligible services, the results of Chapter V clearly point to the fact that the vast majority of the potentially eligible students being served were not subsequently accessing VR eligible

services. We also saw that the potentially eligible students were more likely to be male and white when compared to VR eligible students. Additionally, we saw evidence of differences in the disability characteristics of students accessing potentially eligible and VR eligible services. Lastly, the results presented suggest that access to services for the potentially eligible and VR eligible students was influenced by the size of the high school and the district office with which a high school was associated.

### *Bounded Rationality and Street-Level Decision-Making*

While evidence exists to indicate the important role that task uncertainty played in Missouri VR's extra-organizational response, many possible explanations exist to specifically explain the pathways through which it operated and influenced policy-relevant performance outcomes. Although Missouri VR commonly relies on partners to achieve policy goals, the extra-organizational policy response described in the current case was unique in the fact that, for the first time within Missouri VR, an entire population of individuals was being served outside of the direct reach of VR counselors. In restricting the direct involvement of VR counselors to serving only the VR eligible population, VR counselors did in fact avoid direct responsibility for serving thousands of new individuals, but an impact was felt nonetheless. The qualitative results of Chapter IV reveal that VR counselors still had to begin tracking the provision of pre-employment transition services to eligible high school students, which added to their workload, but perhaps of greater significance was the added complexity of managing new partnerships that appeared in the high schools and territories that they had been serving. The introduction of new projects, programs, and partners into the established working

relationship that existed between the VR counselor and the high schools that they were serving coupled with uncertainty regarding how to best assimilate the new programs into their work created an environment where discretionary behavior was required and likely altered the local dynamics that existed prior to the introduction of the policy response in a variety of ways, resulting in a variety of unexpected and varied policy-relevant performance outcomes.

While the role of discretion was not central to the design of the current study, the data presented point to the role that it played in explaining the unexpected policy-relevant performance results. As such, it will be important to briefly describe the theory of bounded rationality and the literature on street-level bureaucracy before moving into a discussion of how aspects of these theoretical constructs can support an argument that discretion may have played a causal role in this study. Policy implementation decisions are often made within information-rich environments. Unable to process all of the information simultaneously, actors' decisions are filtered through individualized cognitive processes, which results in significant variation in responses to the same stimulus (March and Simon, 1958; Simon, 1965). Herbert Simon (1947) proposed the idea of bounded rationality in response to prior notions that decision-making was rational. He suggested that rationality is limited when, among other things, information is incomplete and resources are limited. These two conditions are seen as hallmarks of public policy settings (Feldman, 1989). As a result, actors operating within these settings will seek a satisfactory response versus the optimal response, contributing to variation

in implementation behavior and policy-relevant outcomes often seen across different public organizations implementing the same policy.

The theory of bounded rationality supports the notion that policy implementation actors can significantly impact the policy implementation process. Assuming that actors are responding to an internal drive to arrive at a satisfactory response in how they implement policy suggests that a host of individual-level factors influence each individual's assessment of satisfactoriness. The past 40+ years have seen significant advancement in the development of the understanding of the role that individual implementing actors play in the policy implementation process. In studying these implementation actors, scholars have focused on the role of discretion in their decision-making processes. Borne out of the bottom-up approach to policy implementation, Lipsky (1980) brought increased attention to the role that front-line workers play in the policy implementation process. At the time, this approach was counter to the popular top-down approach to policy implementation, which emphasized oversight and control, and viewed those at the front-line as simply reacting to orders from above. He defined front-line workers, aka, street-level bureaucrats as, "public service workers who interact directly with citizens in the course of their jobs, and who have substantial discretion in the execution of their work" (p.3). He goes on to describe the unique role of street-level bureaucrats within the policy implementation process, "The policy-making roles of street-level bureaucrats are built upon two interrelated facts of their positions: relatively high degrees of discretion and relative autonomy from organizational authority" (p.13). Additionally, the conditions of the work setting are a

critical aspect of positioning the role of the street-level bureaucrat within the policy implementation process. Lipsky provides five specific working conditions that create the opportunity for these individuals to influence how policy is implemented via their use of discretion and autonomy:

- Inadequate resources relative to the assigned tasks
- The demand for services increases to meet supply
- Agency goal expectations tend to be ambiguous, vague, or conflicting
- Performance that is oriented toward goal achievement which is difficult to measure
- Clients are “non-voluntary”; the nature of the service is such that the public is unable to access it elsewhere

In sum, Lipsky’s bottom-up view of policy implementation illustrates the important role that street-level bureaucrats play in the policy implementation process and shines a light on how they do it.

Within the context of the literature on street-level bureaucrats, decision-making is viewed through the lens of discretion. Following Lipsky’s seminal work on the influence of street-level bureaucrats in the policy implementation process, the problem of discretion within government organizations has been widely studied and documented by many scholars. Van Parys (2019) tells us that it is the primary goal of the literature on bureaucratic discretion to focus on better understanding how freedom to make decisions (aka discretion) is used in practice. Thomann (2018) provides a simple and compact definition of discretion as “the freedom to decide what should be done in a

particular situation” (p. 583). Within this broad definition, a variety of other definitions and approaches to conceptualizing discretion have emerged. Brodtkin (2011) asserts that discretion is a problem of rational choice. She claims that discretion is a calculus of choice that is informed by a common set of informal rules, which emerge from street logic. Like Lipsky’s conceptualization of the environmental conditions of the street-level bureaucrat, she states that choice depends, in part, on the availability of organizational resources that make the choice of responsiveness and quality less costly than the alternative. Brodtkin (1997) also asserts that street-level practitioners do not necessarily do what they wish, but what they can. She goes on to provide the example of the caseworker with limited choices regarding access to job training or job opportunities being unlikely to offer them to their clients, regardless of personal preference, because the cost to best serve this single person may be outweighed by the need to serve so many others. However, she also asserts that this does not preclude other occasions when a caseworker may be willing to incur additional costs to respond to a favored client or make an exception that is personally rewarding for various reasons. In other words, the caseworker is making a calculated decision designed to be adaptive to their needs, which is based on their assessment of specific and relevant factors at that point in time.

As has been described, in certain public organization domains, discretionary powers are inevitable. While commonly viewed as something to be controlled, discretion on the part of street-level workers can have advantages. First, street-level workers often work in situations that are too complicated to be reduced to standard

rules or programmatic formats. This complexity combined with the problem of scarce resources creates a need for discretionary decision-making (Meyers and Vorsanger, 2003). In making judgments about people, street-level bureaucrats use discretion to respond quickly and properly to the human dimensions of the situations they encounter. Second, as Lipsky (1980) argues, discretion promotes workers' self-regard, providing an air of professionalism, which is important in a worker–client relationship. Lastly, in her analysis of discretion, Thomann (2018) states that discretion helps street-level workers to tailor a policy to specific circumstances. It is this personal “tailoring” via discretionary acts that contributes to the policy implementation response variety across seemingly similar situations.

Reflecting on the results presented in Chapter IV we can clearly see evidence of discretionary decision-making on the part of Missouri VR's program designers and field staff. Program designers were in many ways forced by the policy design to choose how they could comply and in doing so elected to exercise their discretion by protecting key aspects of the organization that they deemed most important. At the local level, the interview data pointed to various conflicting reports of the value of the additional program partners for high schools and students, with some counselors describing an effective working relationship and others describing a situation wherein the VR counselor and the third-party provider were coexisting but not necessarily working together. In many ways the design of the policy response was to minimize the involvement of counselors, so it should not perhaps come as a surprise that there were inconsistencies in how counselors chose to interact with their local pre-employment

transition service providers. In this way it appears that the desire to avoid overloading counselors by attempting to create new processes outside of the existing organizational infrastructure caused unexpected challenges, which led to uncertainty, discretionary behavior, and ultimately unexpected policy-relevant outcomes. While the unexpected policy-relevant performance outcomes described in Chapter V are not direct evidence of the effects of discretionary behavior, per se, they are an indicator of the influence of local practices in response to the same policy across organizational actors.

### *The Role of the High School*

While the role of the high school was not central to this analysis, the qualitative and quantitative results suggest that perhaps practices at the high school level were influencing access to services for potentially eligible and eligible students. As evidenced by reported interview data, it appears that there was variation in how working relationships developed at the local level between the potentially eligible service providers and the VR counselors. If potentially eligible service providers and/or VR counselors were not instructed on how to develop local tri-partite relationships to also include their high school partners, or told that it was important, then each party may have been inclined to continue to serve their respective population without any degree of consistent or strategic interaction. Differences in participant level demographics suggest that the potentially eligible providers and the VR counselors may have been serving slightly different populations. The fact that the potentially eligible providers were initially engaging with younger students is expected as this was a key intention of the policy change. However, it is unexpected that we would see differences between



potentially eligible and eligible participants as it relates to gender and race/ethnicity, for example. As the high school is the driver of referrals to both the potentially eligible service providers and VR counselors, the potentially eligible providers may have been engaging different high schools and in turn students with different demographic characteristics than the VR counselors. Lastly, the influence of high school enrollment size was quite interesting. These results suggest a strong influence of the referral practices happening within each high school. Perhaps with limited staff to engage with the potentially eligible service providers and VR counselors coupled with working in a higher enrollment school, key referral actors at the high school level found their available time to spend choosing how and when to refer potentially eligible and eligible students limited. In other words, perhaps it was easier for high school staff to refer a high proportion of students in lower enrollment schools simply due to the ease of being responsible for a smaller number of students per staff person. While a higher raw number of students may have been referred in high enrollment schools, the proportion was lower due to limited human resources within the high school.

### **Contributions**

Results and conclusions of this study contribute to the organization and policy implementation literature bases in at least six important ways. First, the results expand support for structural contingency theory by demonstrating how environmental contingencies cause structural changes. Second, it fills a void in the literature by showing how an extra-organizational policy response directly influences local level operations in both expected and unexpected ways. Third the results of this study

provide additional support for the applicability of the Integrated Implementation Model (Winter, 1990; Winter and Nielsen, 2008) within the public policy implementation research domain as an important conceptual framework by demonstrating the important role of organizational characteristics on the policy implementation process. Fourth, the results provide public policy designers and public administrators with specific insights into the impact of the role that task uncertainty has on how organizations respond, which ultimately affect implementation results associated with the policy's target population. Fifth, while not necessarily central to this study, results suggest an important connection between task uncertainty and discretion. Lastly, through deep analysis of administrative data several new questions emerged that seek to address issues of equity of access to important services for high school students with disabilities.

### **Limitations of the Study**

While this study offers several contributions to the academic literature as described above, several limitations existed that affect generalizability of the results. First, the current study relies on data obtained from one organization. While the current study offered the opportunity to deeply examine the policy implementation processes happening within Missouri VR, the results are not necessarily generalizable to other public organizations. Second, the researcher relied on convenience sampling to recruit interview participants. While efforts were made to select a representative sample of VR organizational actors and included those with a central role in developing the policy, the total number of those interviewed represented a small percentage of the total policy

implementation actors working for Missouri VR and its partner organizations.

Interviewing more organizational actors may have generated additional themes not captured. A third limitation was the fact that participants were asked to recall events that occurred up to 7 years earlier, which certainly opens the possibility of misremembered information being reported and thus biasing results. A fourth limitation was the relationship of the researcher to those organizational actors who were interviewed. The researcher was an active employee of Missouri VR prior to and during the interview process. The researcher had established working relationships with each person interviewed. The nature of this relationship could have impacted the participant responses. A fifth limitation was the nature of the data set used for the quantitative analyses. The VR administrative data set is the result of data entered into the VR case management system by staff in the field. Data entered into the case management is assumed to be accurate, but the possibility certainly exists for data entry errors to occur and potentially bias the results of the quantitative analyses. Additionally, as described in Chapter V, several issues with the data for potentially eligible students existed. In particular, although potentially eligible participants were provided services in 2015 and 2016, data capturing potential eligible cases did not exist until 2017, so the first three years of potentially eligible data are difficult to interpret. Additionally, potentially eligible case data were limited in scope, which limited the ability to make comparisons to the eligible participants across a variety of demographic characteristics. Lastly, given the seemingly important role of the high school staff to refer students (or not) to VR services, data at the high school level was limited to only high school name and

associated VR district office in the data set. The researcher was required to incorporate additional elements associated with each high school to deepen the opportunity for analyses at the high school level.

### **Suggestions for Future Research**

This study provided a first-look in-depth analysis of the effects of specific aspects of WIOA on the organizational structure of one VR agency and the subsequent policy-relevant results through the lens of contingency theory. The results and conclusions provide an opportunity for policy makers and public administrators alike to be aware of the influence of significant policy change on organizational structure, which, as the current study demonstrates, can lead to expected, but also unexpected implementation results. The unpredictable influence of organizational structural changes on implementation results can likely be mitigated by reducing uncertainty early on in the implementation process. First, future research could focus on across-organization variation in VR organizational response to WIOA. As described in Chapter I, limited research exists that offers a description of the responses of various VR organizations to the changes brought about by WIOA in the area of pre-employment transition services. Isolating specific aspects of the policy implementation process to be measured and analyzed across multiple VR organizations would provide an opportunity to evaluate the impact of the federal policy change at more of a national level. Second, future research could utilize a more specific measure of uncertainty within the VR organization in response to the policy change. As the current study was exploratory in many ways, relying on historical accounts, a more timely and direct measure of task uncertainty may

add a degree of validity to the results. Future research could also include other stakeholder perspectives (i.e. high school staff) to develop a broader understanding of the role of the high school and its staff in student access to VR services and how the addition of new services to potentially eligible students may have impacted referral patterns coming from the high school to VR counselors and/or third-party VR service providers. Lastly, given the seemingly important role that discretion on the part of street-level bureaucrats played in explaining aspects of the local level variation in policy-relevant performance outcomes, future studies should consider explicitly assessing discretion and estimating the impact of discretion on local policy implementation effects.

## **Conclusion**

Public organizations bear the bulk of the burden for implementing policy. Organization theory tells us that changing one aspect of the environment will have an effect on specific characteristics of the implementing organization itself. In turn, those changing organizational characteristics can impact the implementation results in both expected and unexpected ways. The seemingly unpredictable responses of public organizations implementing common policy can be better understood and perhaps better predicted by policy makers and public administrators when the trivariate influence of environment, structure, and performance is considered.

Reflecting on the interpretation of the results within the context of the research problem, we can begin to trace causal elements associated with the policy design (left-hand side of Winter's model) through implementation results (right-hand side of

Winter's model). Where policy-making is concerned, understanding the presence of the organizational drive to achieve and/or maintain fit is critical. Given that organizations seek to attain fit via the alignment of their contingencies, structure, and performance, clarity in what constitutes performance is one area that extra-organizational policymakers have a degree of control. Recognizing that the act of introducing new policy represents a key organizational contingency change, which in turn increases the likelihood of organizational structural changes, reducing task uncertainty by clarifying performance seems to be an important key to reducing unpredictability of policy-relevant results.

This study found that task uncertainty prompted by the new federal policy directive caused structural changes within the VR organization in the form of new extra-organizational relationships being developed to comply with the new mandates. The autonomy afforded by the high degree of task uncertainty required Missouri VR's program designers to rely on a broad definition of performance success, leaving the organization free to design structures that complied with the mandate but were also sensitive to whatever other organizational factors were deemed important by the organization's leadership. As a result, Missouri VR's leadership employed organizational structural changes that resulted in a design that focused on compliance, and protecting infrastructure it deemed most important; namely working hard to avoid adding new work to the already full plates of VR counselors, as well as maintaining, to the degree possible, the course that had already been set in terms of how the organization served VR eligible students. Operating with such a broad definition of performance ultimately

led to the expected achievement of compliance-driven policy goals (to make services available to all potentially eligible students with disabilities in Missouri), but also led to various unexpected policy-relevant results, which impacted high school student access to VR services. Specifically, the introduction of new programs and services for potentially eligible students seems to have disrupted the process by which high school students became VR eligible participants, as well as causing possible inequities in services to potentially eligible students.

Multiple possible explanations likely exist to explain the unexpected policy-relevant outcomes, but while limited, evidence from the current study suggests that discretionary practices of organizational actors may have played an important role. In the current case, it seems that the definition of performance was so broad in scope that it demanded discretionary behavior on the part of organizational actors. In the case of Missouri VR, several factors were important when it came to the specific type of structural response selected, namely the need for an interdependent relationship among organizations to achieve the results and a drive to protect key infrastructure aspects of the organization. Similar to the uncertainty that resulted from the policy design, it seems that local level implementers experienced uncertainty as to how to incorporate the new structural response of their own organization, likely fueling discretionary behavior, and leading to unexpected policy-relevant outcomes. In sum, the results of this study show how seemingly straightforward policy goals and directives get filtered through unique characteristics of an organization and its actors causing various policy-relevant outcomes, expected and otherwise. Policymakers and public

administrators alike should ensure that the impact of contingencies on the response of the organization is considered as a factor contributing to policy-relevant performance outcomes, expected and otherwise.



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## APPENDICES

APPENDIX A  
DEFINITION OF TERMS

## Definition of Terms

*Competitive Integrated Employment:* Employment in a job that pays at a rate at or above minimum wage and is comparable to the rate of pay of others in the work unit where the work unit is comprised of people with and without disabilities.

*Contingency:* A in internal or external organizational factor that influences other aspects of the organization.

*Contingency Theory:* An organization theory that states that there is no one best way to organize, the optimal course is contingent on internal and external situational factors associated with the organization.

*Eligible student with a disability:* A student with a disability who has applied for, and been determined eligible for the full range of VR services available to all eligible VR participants regardless of age.

*Extra-Organizational Policy Response:* Missouri VR's network of contracted service providers designed to make services available to all potentially eligible students with disabilities in the state.

*Fit:* The degree to which an organization's contingencies, structure, and performance align.

*Policy implementation:* The manner in which the goals and intentions of a policy or law are carried out.



*Potentially eligible student with a disability:* A student with a disability who is eligible to receive only the five required and/or nine authorized pre-employment transition services as defined by WIOA.

*Pre-employment transition services:* The five required and/or nine authorized services defined by WIOA.

*Program Year:* The period of July 1<sup>st</sup> through June 30<sup>th</sup>, labeled by the year of the start date.

*Structural Contingency Theory:* An organization theory that states that there is no one best structure for all organizations. The structure that is most effective is the one that allows the organization to optimize fit between its contingencies and performance.

*Student with a disability:* VR participant who is enrolled in secondary or post-secondary education and is between the ages of 14 and 21 years at the time of entry into VR services.

*Task Uncertainty:* Not having all the needed or preferred information to enable a confident response.

*The Rehabilitation Act:* Federal law establishing the federal-state vocational rehabilitation program in the United States. It is Title IV of the Workforce Innovation and Opportunity Act of 2014.

*Workforce Innovation and Opportunity Act (WIOA):* Federal workforce legislation designed to unite the federal workforce programs in the United States.

*Youth with a disability:* VR participant who is under the age of 24 years at the time of entry into VR services.

APPENDIX B  
IRB APPROVAL



**Institutional Review Board  
University of Missouri-Columbia**

FWA Number: 00002876

IRB Registration Numbers: 00000731, 00009014

482 McReynolds Hall

Columbia, MO 65211

573-882-3181

irb@missouri.edu

July 06, 2021

Principal Investigator: Christopher B. Clause (MU-Student)

Department: Public Affairs-PHD

Your Exempt Amendment Form v.2 to project entitled Mixed Methods Analysis of one State Vocational Rehabilitation Organization's Response to the Introduction of Pre-Employment Transition Services. was reviewed and approved by the MU Institutional Review Board according to the terms and conditions described below:

IRB Project Number	2027963
IRB Review Number	326870
Initial Application Approval Date	August 18, 2020
Approval Date of this Review	July 06, 2021
IRB Expiration Date	August 18, 2022
Level of Review	Exempt
Project Status	Active - Exempt
Risk Level	Minimal Risk
Approved Documents	questions_implementers.docx questions_managers.docx questions_designers.docx recruitment email - clean copy consent form (clean copy)

The principal investigator (PI) is responsible for all aspects and conduct of this study. The PI must comply with the following conditions of the approval:

- No subjects may be involved in any study procedure prior to the IRB approval date or after the expiration date.
  - All changes must be IRB approved prior to implementation utilizing the Exempt Amendment Form.
  - Major noncompliance deviations must be reported to the MU IRB on the Event Report within 5 business days of the research team becoming aware of the deviation. Major deviations result when research activities may affected the research subject's rights, safety, and/or welfare, or may have had the potential to impact even if no actual harm occurred. Please refer to the MU IRB Noncompliance policy for additional details.
  - The Annual Exempt Form must be submitted to the IRB for review and approval at least 30 days prior to the project expiration date to keep the study active or to close it.
  - Maintain all research records for a period of seven years from the project completion date.
- If you are offering subject payments and would like more information about research participant payments, please click here to view the MU Business Policy and Procedure: [http://bppm.missouri.edu/chapter2/2\\_250.html](http://bppm.missouri.edu/chapter2/2_250.html)

If you have any questions or concerns, please contact the MU IRB Office at 573-882-3181 or email to [muresearchirb@missouri.edu](mailto:muresearchirb@missouri.edu).

Thank you,  
MU Institutional Review Board

APPENDIX C  
INTERVIEW PARTICIPANT RECRUITMENT EMAIL

“Dear \_\_\_\_\_,

As a PhD student within the Truman School of Public Affairs at the University of Missouri, I am the Principal Investigator of a research study designed to better understand the effects of pre-employment transition services (Pre-ETS) programs. I’m asking for your participation because you were working for Missouri VR (MVR) when Pre-ETS programs were introduced and I’d like to learn more about your experiences. Participation will consist of a phone interview wherein you will be asked a series of questions about your experiences dating back to 2015 as MVR began the introduction of new pre-employment transition services (i.e. the VR summer work experience, services provided through local Independent Living Centers, services provided by the MU specialists, as well as new service expectations for VR counselors). Each interview will last ~30-45 minutes and your responses will be kept confidential. If you are interested in participating, please respond to this email expressing your interest. Interested participants will then be provided with more information regarding the informed consent process.”

APPENDIX D  
CONSENT SCRIPT



*The below script was be read out loud to each participant prior to the Principal Investigator beginning the interview.*

Hello, my name is Chris Clause. I am a PhD student within the Truman School of Public Affairs at the University of Missouri. I am the Principal Investigator of a research study designed to better understand the effects of pre-employment transition services (Pre-ETS) programs as designed by Missouri Vocational Rehabilitation (MVR). Additionally, the study seeks to offer explanations as to the causes of those effects.

The purpose of this research study is to expand knowledge of how federal policy is implemented at the state level. It is believed that the results of this study can inform future policy designed to enhance equity of access to Vocational Rehabilitation services for intended populations.

As mentioned in the recruitment email, your participation in this research study requires that you answer several interview questions pertaining to your experiences dating back to 2015 as MVR began the introduction of new pre-employment transition services. Your responses are extremely valuable and will be an important part of better understanding how federal policy is implemented at the state level.

Participation in this research study is voluntary. You can stop being in the study at any time without giving a reason. Just tell me right away if you wish to stop taking part.

If you have any questions about this study at any time after the interview, you can call me, Chris Clause, at 660-441-7554.

If you want to talk privately about your rights or any issues related to your participation in this study, you can contact University of Missouri Research Participant Advocacy by calling 888-280-5002 (a free call), or emailing [MUResearchRPA@missouri.edu](mailto:MUResearchRPA@missouri.edu).

APPENDIX E  
INTERVIEW QUESTIONS – VR STAFF

*Questions for VR Program Designers (Individual Interviews ~45 minutes each)*

Introductory comments:

Thank you for your willingness to participate in this interview. Your responses are very valuable and will be an important part of better understanding how federal policy is implemented at the state level. I am going to ask you a series of questions that are intended to dig deeper into your experiences as a part of the leadership team within Missouri VR who was responsible for designing Missouri VR's response to the passage of WIOA, specifically the introduction of Pre-employment transition services.

Just to refresh your memory, WIOA was signed into law on July 22, 2014. While the federal regulations would not be finalized until August 19, 2016, Missouri VR did not wait on those final regulations before designing its Pre-ETS programs, as the expectations for meeting the 15% spending mandate went into effect immediately. Key aspects of Missouri VR's response included the VR summer work experience, which was developed and implemented during the summer of 2015, the Independent Living Pre-ETS programs, which were introduced that same year, and by the fall of 2015, the Pre-ETS program through the University of Missouri was introduced. Additionally, during 2016 a statewide training effort was led which provided guidance for how VR counselors could receive "credit" for providing Pre-ETS to eligible VR students with disabilities.

If it's ok with you I will record our conversation just so to make sure that I have an accurate record of your comments.

Hopefully that quick refresher was helpful. With all of this in mind, are you ready to begin?

- 1) Describe your role in determining how MVR designed its Pre-ETS strategies.
- 2) Prior to the introduction of WIOA/Pre-ETS, but during your VR career, had you been involved in other situations that required your involvement in constructing a similar response?
- 3) What factors were considered, by you and others, as you decided how to approach the development of MVR's Pre-ETS strategies?
- 4) Aside from meeting the 15% spending mandate, what were your impressions about expected Pre-ETS program outcomes?
- 5) Were there Pre-ETS strategies that were discussed or considered, but never implemented? If yes, what were they and why weren't they implemented?
- 6) In hindsight, would you have made any changes to how the MVR Pre-ETS strategies were designed and/or implemented?

- 7) Overall, what are your reactions to the impact that MVR's Pre-ETS strategies have had on how MVR provides services to students with disabilities in Missouri?

*Questions for VR Managers (Individual Interviews ~45 minutes each)*

Introductory comments:

Thank you for your willingness to participate in this interview. Your responses are very valuable and will be an important part of better understanding how federal policy is implemented at the state level. I am going to ask you a series of questions that are intended to dig deeper into your experiences as a part of the leadership team within Missouri VR who was responsible for designing Missouri VR's response to the passage of WIOA, specifically the introduction of Pre-employment transition services.

Just to refresh your memory, WIOA was signed into law on July 22, 2014. While the federal regulations would not be finalized until August 19, 2016, Missouri VR did not wait on those final regulations before designing its Pre-ETS programs, as the expectations for meeting the 15% spending mandate went into effect immediately. Key aspects of Missouri VR's response included the VR summer work experience, which was developed and implemented during the summer of 2015, the Independent Living Pre-ETS programs, which were introduced that same year, and by the fall of 2015, the Pre-ETS specialist program, as contracted through the University of Missouri was introduced. Additionally, during 2016 a statewide training effort was led which provided guidance for how VR counselors could receive "credit" for providing Pre-ETS to eligible VR students with disabilities.

Hopefully that quick refresher was helpful. With all of this in mind, are you ready to begin?

- 1) Thinking back to 2015 and 2016, do you recall the first time that you were informed about any or all of these new programs?
  - If so, please describe that experience.
- 2) What is your recollection about how these new programs were rolled out from Central Office to the District Offices?
- 3) Did your understanding of the role of the VR Counselor change as a result of the introduction of pre-employment transition services?
  - If it did change, how did it impact your management practices?
- 4) As a result of these new services, were you instructed or encouraged to do your job differently?
- 5) Since 2015, how has the addition of pre-employment transition services changed how you have chosen to do your job?
  - What factors were important to you that led to those choices?
  - *If yes, is it safe to say that if Pre-ETS didn't exist you would not be doing "x"?*

- 6) Overall, what are your reactions to the impact that MVR's pre-employment transition services have had on how MVR serves students with disabilities in your region?

*Interview Questions for VR Counselors (Individual Interviews ~30 minutes each)*

Introductory comments:

Thank you for your willingness to participate in this interview. Your responses are very valuable and will be an important part of better understanding how federal policy is implemented at the state level. I am going to ask you a series of questions that are intended to dig deeper into your experiences as a part of the leadership team within Missouri VR who was responsible for designing Missouri VR's response to the passage of WIOA, specifically the introduction of Pre-employment transition services.

Just to refresh your memory, WIOA was signed into law on July 22, 2014. While the federal regulations would not be finalized until August 19, 2016, Missouri VR did not wait on those final regulations before designing its Pre-ETS programs, as the expectations for meeting the 15% spending mandate went into effect immediately. Key aspects of Missouri VR's response included the VR summer work experience, which was developed and implemented during the summer of 2015, the Independent Living Pre-ETS programs, which were introduced that same year, and by the fall of 2015, the Pre-ETS specialist program, as contracted through the University of Missouri was introduced. Additionally, during 2016 a statewide training effort was led which provided guidance for how VR counselors could receive "credit" for providing Pre-ETS to eligible VR students with disabilities.

Hopefully that quick refresher was helpful. With all of this in mind, are you ready to begin?

- 1) Thinking back to 2015 and 2016, do you recall the first time that you were informed about any or all of these new programs?
- 2) What is your recollection about how these new programs were rolled out from Central Office to the District Offices, and from your District Supervisor to you and your colleagues?
- 3) Were there specific pre-employment transition services or programs that were better received by you and your colleagues than others?
  - If so, why?
- 4) Describe your experience collaborating with any or all of these new pre-employment transition service providers.
- 5) Did the expectations for how you should do your job change as a result of the introduction of pre-employment transition services?
- 6) Since 2015, how has the addition of pre-employment transition services changed how you have *chosen* to do your job?

- 7) Overall, what are your reactions to the impact that MVR's pre-employment transition services have had on how MVR serves students with disabilities in your region?



APPENDIX F  
INTERVIEW QUESTIONS – MU PRE-ETS STAFF

*Interviews Questions for MU Pre-ETS Program Director (individual interviews ~45 minutes each)*

Introductory comments:

Thank you for your willingness to participate in this interview. Your responses are very valuable and will be an important part of better understanding how federal policy is implemented at the state level. I am going to ask you a series of questions that are intended to dig deeper into your experiences as a part of the leadership team within Missouri VR who was responsible for designing Missouri VR's response to the passage of WIOA, specifically the introduction of Pre-employment transition services.

Just to prime the conversation, WIOA was signed into law on July 22, 2014. While the federal regulations would not be finalized until August 19, 2016, Missouri VR did not wait on those final regulations before designing its Pre-ETS programs, as the expectations for meeting the 15% spending mandate went into effect immediately. Key aspects of Missouri VR's response included the VR summer work experience, which was developed and implemented during the summer of 2015, the Independent Living Pre-ETS programs, which were introduced that same year, and by the fall of 2015, the Pre-ETS program through the University of Missouri was introduced. Additionally, during 2016 a statewide training effort was led which provided guidance for how VR counselors could receive "credit" for providing Pre-ETS to eligible VR students with disabilities.

If it's ok with you I will record our conversation just so to make sure that I have an accurate record of your comments.

Hopefully that quick refresher was helpful. With all of this in mind, are you ready to begin?

- 1) Briefly describe your background prior to your work with the MU Pre-ETS team.
- 2) Thinking back to 2014/2015, do you recall the first time that you were informed about MVRs desire to develop a relationship with MU to contract the delivery of pre-employment transition services?
- 3) What was your understanding of VR's goals for this new program?
- 4) What was your role in the development of the program design and strategies?
- 5) What directives were provided from VR as the program was being built and services began being provided to students?
- 6) What goals did you have for the program?
- 7) What factors motivated those goals?
- 8) In hindsight, would you have made any changes to how the program was designed and/or implemented?

9) Overall, what are your reactions to the impact that the MU Pre-ETS program has had on students with disabilities in Missouri?

*Interview Questions for MU Pre-ETS Specialist (individual interviews ~45 minutes each)*

Introductory comments:

Thank you for your willingness to participate in this interview. Your responses are very valuable and will be an important part of better understanding how federal policy is implemented at the state level. I am going to ask you a series of questions that are intended to dig deeper into your experiences as a part of the leadership team within Missouri VR who was responsible for designing Missouri VR's response to the passage of WIOA, specifically the introduction of Pre-employment transition services.

Just to prime the conversation, WIOA was signed into law on July 22, 2014. While the federal regulations would not be finalized until August 19, 2016, Missouri VR did not wait on those final regulations before designing its Pre-ETS programs, as the expectations for meeting the 15% spending mandate went into effect immediately. Key aspects of Missouri VR's response included the VR summer work experience, which was developed and implemented during the summer of 2015, the Independent Living Pre-ETS programs, which were introduced that same year, and by the fall of 2015, the Pre-ETS program through the University of Missouri was introduced. Additionally, during 2016 a statewide training effort was led which provided guidance for how VR counselors could receive "credit" for providing Pre-ETS to eligible VR students with disabilities.

If it's ok with you I will record our conversation just so to make sure that I have an accurate record of your comments.

Hopefully that quick refresher was helpful. With all of this in mind, are you ready to begin?

- 1) Briefly describe your background prior to your work with the MU Pre-ETS team.
- 2) Do you recall the first time that you learned about the opportunity to join the MU Pre-ETS team?
- 3) What was your understanding of VR's goals for this new program?
- 4) What directives were provided from VR as the program was being built and services began being provided to students?
- 5) What goals did you have for your work as a part of the program?
- 6) What factors motivated those goals?
- 7) Describe your experience collaborating with VR to provide access to MU Pre-ETS services.
- 8) In hindsight, would you have made any changes to how the program was designed and/or implemented?

9) Overall, what are your reactions to the impact that the MU Pre-ETS program has had on students with disabilities in Missouri?

APPENDIX G  
DATA SET CONSTRUCTION

All data included in the data set utilized to conduct quantitative analyses described in Chapter V was obtained from Missouri VR's case management system. Missouri VR's case management system is designed to collect and report data in accordance with the regulations described in the Rehabilitation Administration's Policy Directives 12-05, 13-05, 14-01, and 16-04. From the fully available pre-existing administrative data set, the researcher constructed a customized data sub-set to be used to address the research problem and answer the research questions of the current study. A detailed description of the development of the customized data follows.

Initially the researcher extracted one master excel file from the case management system, which contained participant level data including all required data elements required per the above-mentioned RSA Policy Directives, in addition to a dichotomous indicator (1 = yes; 0 = no) of whether or not each participant was a participant in any of Missouri VR's locally developed pre-employment transition program across all available years. This master file contained data on 668,771 participant cases. The researcher then created a data sub-set, which consisted only of participants who were enrolled in high school and under the age of 22 years at the time of application for either potentially eligible or eligible VR services beginning with program year 2013 (July 1, 2012) through program year 2019 (June 30, 2020). This resulted in a data set that contained 182,799 cases. Because participants can have more than one case (of either type) and because beginning in 2017, VR agencies were required to report on all cases (open or closed) each quarter, the data set contained a

large number of cases that appeared multiple times. The researcher de-duplicated the cases and the result was a data set, which contained 32,761 unique participants.

Characteristics of the participant's referring high school are an important aspect of the current study. The participant's high school name at application is oftentimes entered into the case management system by field staff, but is not a required data field per the Rehabilitation Services Administration. As a result, there are many inconsistencies in the data entry practices associated with the participant's high school name as entered into the data set. To correct inconsistencies in the high school names entered into the VR administrative data set, the researcher matched existing high school names to a listing of all public and charter high schools in the state of Missouri as provided by the Missouri Department of Elementary and Secondary Education. Additionally, building enrollment data were added to the data set. Enrollment data were also provided by DESE. Enrollment was defined as the total number of students in grades 9-12 associated with each high school. The researcher also included local population demographic characteristics associated with each high school. Utilizing the American Community Survey annual estimates, the percentage of residents who were white, black, Hispanic, and other race/ethnicity in each zip code that matched the physical address of each high school building were included in the data set. Lastly, the median household income of residents in each zip code that matched the physical address of each high school building were also included in the data set.

Finally, the researcher also had to deal with issues related to missing data in the form of a participant's high school name. A few common issues were responsible for the



missing high school name data. First, Missouri VR serves high school students who attend both public and private high schools. Participants attending private high schools represented 1.1% of the sample participants. The focus of this study was on students enrolled in public and charter high schools and so students who attended a private high were excluded from analyses wherein high school name was an important variable. Another issue causing missing high school data was when a student was attending high school classes at a Division of Youth Services facility to receive pre-employment transition and/or VR eligible services and/or when no high school name was provided, which was common amongst the potentially eligible student with a disability as this was not a required data element to be reported. The result was that 21% of the total sample did not have an assigned high school name in the original data set. To avoid eliminating such a large number of participants from the data set, the researcher created a proxy high school name for each of these cases. For participants for whom a residence zip code was available, those participants were assigned a high school name that matched the zip code of the associated public or charter high school. When a participant zip code was not available, but a county name was available, the participants was assigned proportionately to a high school in that county. When multiple students with missing zip code data, but existing county name data existed, students were evenly allocated across all high schools in the associated county. In some cases, no zip code or county data were available. In these cases, no additional data were available to reasonably assign a proxy high school name and so these cases were excluded, representing an additional 2.9% of all cases being excluded from analyses that required high school name.

APPENDIX H  
VR DISTRICT OFFICE SERVICE AREA MAP

# VR OFFICES

**1) CAPE GIRARDEAU VR**  
3102 Blattner Drive, Suite 103  
Cape Girardeau, MO 63703  
Toll-free: 877-702-9883

**2) CENTRAL OFFICE VR**  
3024 Dupont Circle  
Jefferson City, MO 65109  
Toll-free: 877-222-8963

**3) CHILLICOTHE VR**  
603 W. Mohawk Road  
Chillicothe, MO 64601  
Toll-free: 866-572-4049

**4) COLUMBIA VR**  
900 W. Nifong Blvd., Suite 210  
Columbia, MO 65203  
Toll-free: 877-222-8961

**5) FARMINGTON VR**  
901 Progress Drive, Suite 100  
Farmington, MO 63640  
Toll-free: 800-640-7110

**6) HANNIBAL VR**  
112 Jaycee Drive  
Hannibal, MO 63401  
Toll-free: 877-222-8960

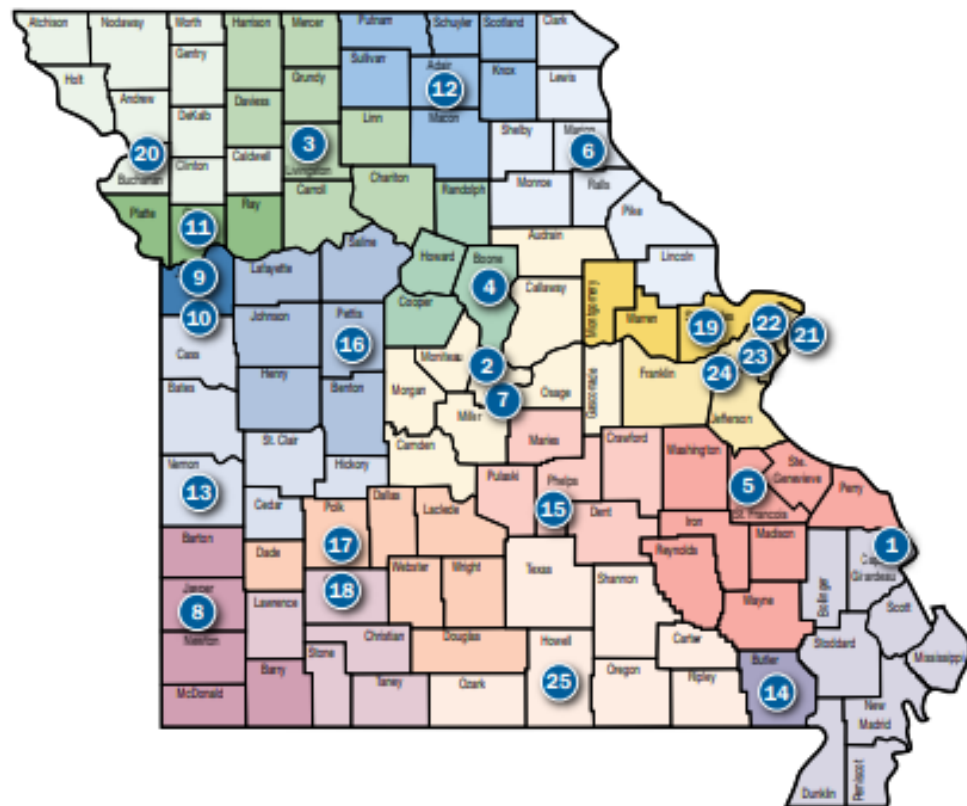
**7) JEFFERSON CITY VR**  
1500 Southridge Drive,  
Suite 200  
Jefferson City, MO 65109  
Toll-free: 866-661-9106

**8) JOPLIN VR**  
801 E. 15th St., Suite B  
Joplin, MO 64804  
Toll-free: 877-222-8964

**9) KANSAS CITY  
DOWNTOWN VR**  
615 E. 13th St., Suite G-3  
Kansas City, MO 64106  
Toll-free: 866-971-8568

**10) KANSAS CITY EAST/  
TRANSITION VR**  
Joseph P. Teasdale State  
Office Building  
8800 E. 63rd St., Suite 260  
Raytown, MO 64133  
Toll-free: 866-831-1363

**11) KANSAS CITY NORTH VR**  
8030 N. Oak Trafficway  
Kansas City, MO 64118  
Toll-free: 877-270-0198



**12) KIRKSVILLE VR**  
1612 N. Osteopathy, Suite B  
Kirksville, MO 63501  
Toll-free: 877-222-8962

**13) NEVADA VR**  
621 E. Highland Ave., Suite 2  
Nevada, MO 64772  
Toll-free: 800-598-3471

**14) POPLAR BLUFF VR**  
1903 Northwood Drive, Suite 3  
Poplar Bluff, MO 63901  
Toll-free: 800-281-9894

**15) ROLLA VR**  
1101A Kingshighway St.  
Rolla, MO 65401  
Toll-free: 800-890-2867

**16) SEDALIA VR**  
2115 W. Broadway Blvd.  
Sedalia, MO 65301  
Toll-free: 800-924-0419

**17) SPRINGFIELD NORTH VR**  
613 E. Kearney St.  
Springfield, MO 65803  
Toll-free: 877-222-8965

**18) SPRINGFIELD SOUTH VR**  
1735 W. Catalpa St., Suite C  
Springfield, MO 65807  
Toll-free: 877-222-8967

**19) ST. CHARLES VR**  
3737 Harry S. Truman Blvd.,  
Suite 400  
St. Charles, MO 63301  
Toll-free: 855-283-2681

**20) ST. JOSEPH VR**  
State Office Building  
525 Jules St., Room 201  
St. Joseph, MO 64501  
Toll-free: 877-702-9876

**21) ST. LOUIS DOWNTOWN VR**  
220 S. Jefferson Ave., Suite 110  
St. Louis, MO 63103  
Toll-free: 866-971-8569

**22) ST. LOUIS NORTH VR**  
4040 Seven Hills Drive,  
Suite 257  
Florissant, MO 63033  
Phone: 314-475-7999

**23) ST. LOUIS SOUTH VR**  
St. Louis South Service Center  
7545 S. Lindbergh Blvd.,  
Suite 100  
St. Louis, MO 63125  
Toll-free: 877-222-8968

**24) ST. LOUIS WEST/  
TRANSITION VR**  
9900 Page Ave., Suite 104  
St. Louis, MO 63132  
Phone: 314-587-4877

**25) WEST PLAINS VR**  
3417 Division Drive, Suite 2  
West Plains, MO 65775  
Toll-free: 877-222-8959

## VITA

Christopher Clause was born in Cincinnati, Ohio and grew up in rural central Indiana. He received his Bachelor of science degree in Psychology from Indiana University-Bloomington in May 2002. He received his Master of science degree in Psychology from the University of Central Missouri in May 2004. He started his doctoral study at the University of Missouri at the Truman School of Public Affairs in January 2016. Chris' research focused on the influence of organizations on public policy implementation. He received his Ph.D. degree in public affairs from the University of Missouri-Columbia in July 2022.