

# Brain Injury in the Corrections System:

Implications of Misdiagnosis or Underdiagnosis

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# Disclosures

## Presenter

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# Learning Objectives

At the conclusion of this activity, participants will be able to:

- Participants will be able to describe the most common causes of Mild Brain Injury and how it is diagnosed
- Participants will be able to identify the long term consequences of undiagnosed Mild Brain Injury
- Participants will be able to list available screening methods for identifying Mild Brain Injury

# Populations at highest risk for TBI

- Children 0 – 4 (African American children have the highest rate for this age group)
- Youth aged 15 -19 (African American youth have the highest rate for this age group)
- The elderly
- Athletes of all ages
- Homeless individuals of all ages
- Incarcerated individuals, including juvenile detainees
- Individuals harmed by domestic violence

# Brain Injury in Adult Corrections

- Shiroma (2010) reports that 60% of inmates have had a history of brain injury prior to incarceration
- With 2 million incarcerated offenders, we have 1.2 million people living with brain injury in our prisons.
- Prevalence in the population on the whole is 4.5 % which would predict only 90,000 in prisons

# Brain Injury in Adult Corrections

- Williams et al. (2010) report that repeated TBI results in an increased offending behavior
- McKinlay et al. (2013) looked at relationship between individuals who experienced a TBI during childhood and adult offending behavior
  - ▣ Individuals who experienced childhood TBI were more likely, as adults, to have an offending history
  - ▣ Relationship of TBI to offense was stronger the more severe the injury

# Brain Injury in Juvenile Justice

- Kaba et al. (2013) report in a study of adolescents in the NY City Jails that 67% of screened detainees reported a history of at least one brain injury
- Most frequent causes were assaults (55.5%) followed by falls (41%)
- Inmates with brain injury were more likely to be users of mental health services
- Emotional dysregulation and impaired processing speed are likely may be linked to criminal justice involvement

# Brain Injury in Juvenile Justice

- Perron and Howard (2008) found that youth with TBI display significantly more
  - Psychiatric distress
  - Earlier onset of criminal behavior
  - Earlier onset substance abuse behavior
  - More lifetime substance abuse and suicidality



# What are the Long-term Consequences of Brain Injury?

- Short- or long-term problems and requiring help in performing activities of daily living
- A wide range of problems in thinking, sensation, memory, learning, language, behavior, emotions
- Mental health problems
  - **severe depression**
  - **anxiety**
  - **difficulty controlling anger**
  - **alcohol or substance abuse**
- Other Disorders
  - **Epilepsy**
  - **Increased risk for both Alzheimer's and Parkinson's diseases**
  - **Other brain disorders associated with increasing age, Chronic Traumatic Encephalopathy (CTE)**



# Implications for Detainees

Detained youth with brain injuries:

- ▣ More likely to be diagnosed as having mental illness
- ▣ More likely to have disciplinary problems during incarceration or poor adjustment to prison life or rules
- ▣ Tend to get kicked out of groups
- ▣ Fail at programs or parole



# Challenge of interpreting behavior

- Effects of brain injury can appear to be lack of co-operation or disrespect
  - ▣ Failure to respond quickly to directives
  - ▣ Inability to initiate requests for assistance
  - ▣ Difficulty remembering prior discussions
  - ▣ Inconsistent attention
  - ▣ Difficulty following directions
  - ▣ Difficulty learning routines
  - ▣ Difficulty expressing needs
  - ▣ Impulsivity, emotional dyscontrol



# Undiagnosed Brain Injuries

- Systems that have primary functions other than Brain Injury will not document Brain Injury
  - Unless medical documentation available
  - Brain Injury screening is in place
- Many brain injuries are undiagnosed
- A need for screening exists



# Undiagnosed Brain Injuries

- Undiagnosed Brain Injury often referred to as the “hidden” disability
- Individuals may
  - ▣ Drop out of school
  - ▣ Start abusing substances
  - ▣ Fail at relationships
  - ▣ Become victims
  - ▣ End up in Mental Health System
  - ▣ Become homeless
  - ▣ Be unable to obtain or maintain a job
  - ▣ Results in incarceration in adult and juvenile justice systems



**A young man, in his mid-twenties, hospitalized in a mental health unit, was admitted with the following complaint, “There is some-thing wrong with my head and I can’t keep a job.” During a clini-cal interview, he revealed that his father had not been in his life for almost twenty years. His father had been physically abusive and he was subsequently hospitalized for broken bones. When he was school age, he was hit by a car, resulting in hospitalization for multiple injuries. He was placed in Special Education, as he had trouble learning and controlling his behavior in class. As an adolescent, he began using multiple drugs as well as alcohol. While still a teen, he was involved in another incident, resulting in hos-pitalization for several days. Thereafter, his ability to concentrate, remember, and control his temper became even worse.**

**After high school, he enlisted in the National Guard and served in Iraq for several months. He was injured in an attack, later describing this experience as ‘severe PTSD’. Once he was back in the states, he could not keep a job. His use of drugs and alcohol escalated and he was jailed for various offenses. He had nowhere to sleep except his car. A mental health crisis resulted in hospitalization. The clinician recognized the likelihood of trau-matic brain injury (TBI). Neuropsychological testing revealed to the multidisciplinary treatment team problems with his multiple conditions.**

**This young man was indeed a case of “Unidentified TBI”. Once brain injury was identified as a contributing factor, he was linked to appropriate services and supports and was able to get supported employment and move along with his life.**

# Potential Cost to Society

- Brain Injury left untreated can lead to:
  - Academic failure and dropping out
  - Un-employment or under-employment
  - Homelessness
  - Use of illegal drugs
  - Psychiatric problems
  - Repeated brain injury
  - Criminal Justice involvement

# How Should the Problem of Brain Injury in the Criminal Justice System be addressed?

- A recent report from the Commission on Safety and Abuse in America's Prisons recommended:
  - ▣ Increased health screenings and evaluations
  - ▣ Treatment for inmates
  - ▣ Development of partnerships with community health providers to assure continuity of care
  - ▣ Case management for released inmates
- See <http://vera.org/project/commission-safety-and-abuse-americas-prisons>



# How to address the problem of brain injury detention or prisons?

1. Screening for identification of brain injury
2. Assessment for identification of cognitive impairment
3. NeuroResource Facilitation to identify potential long term services and supports

*NEURORESOURCE FACILITATION  
FOR PRISON INMATES WITH BRAIN  
INJURY TO IMPROVE RE-ENTRY*



Byrne Justice Assistance Grant  
Pennsylvania Commission on Crime and  
Delinquency

# *NeuroResource Facilitation for Prison Inmates with Brain Injury to Improve Re-Entry*

## Project goals:

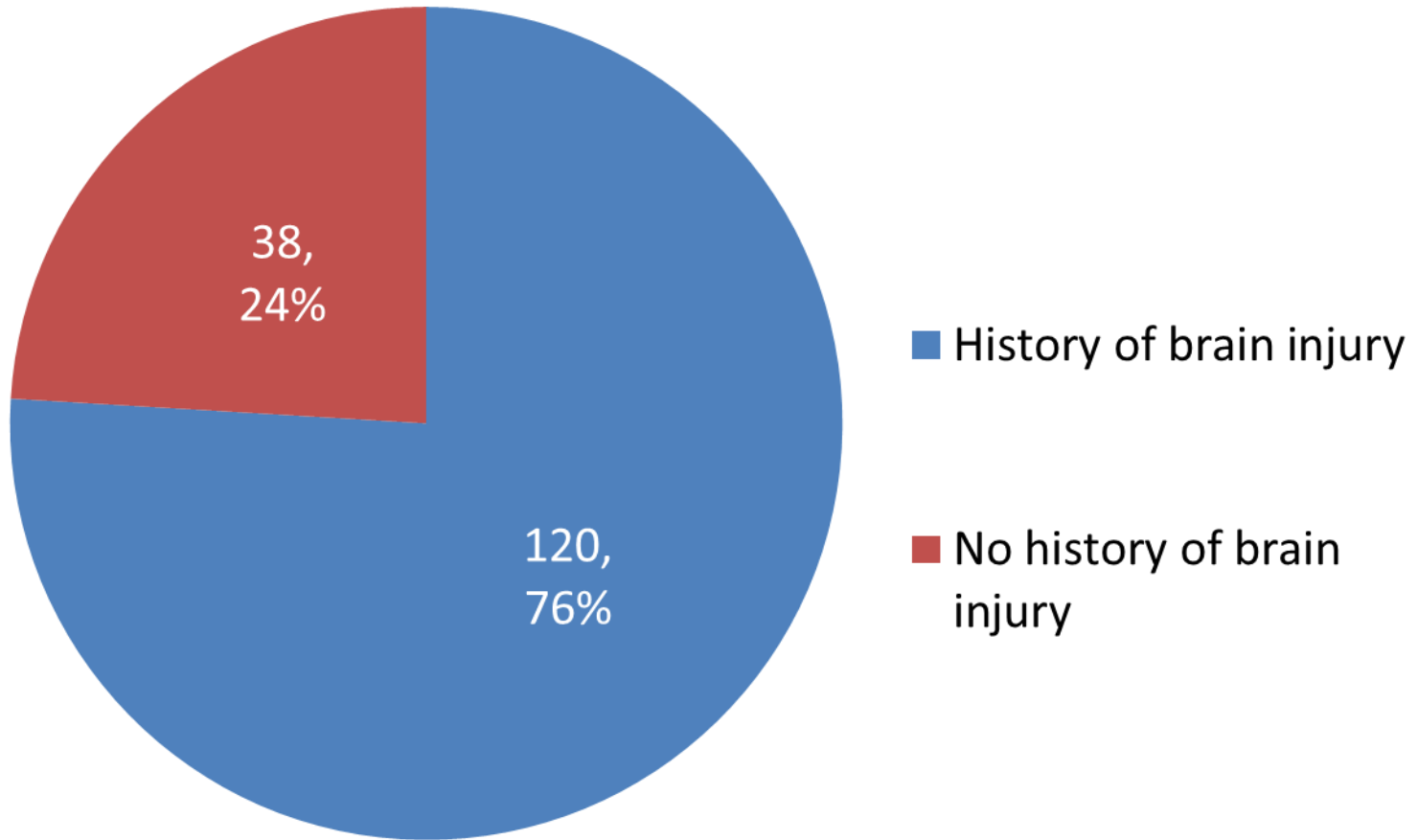
- Coordinate with Re-Entry staff (DOC, Probation and Parole, OVR)
- Identify inmates who have brain injury
- Plan and develop services that will help them to be successful upon release from prison
- Follow up post-release to ensure implementation of the plan



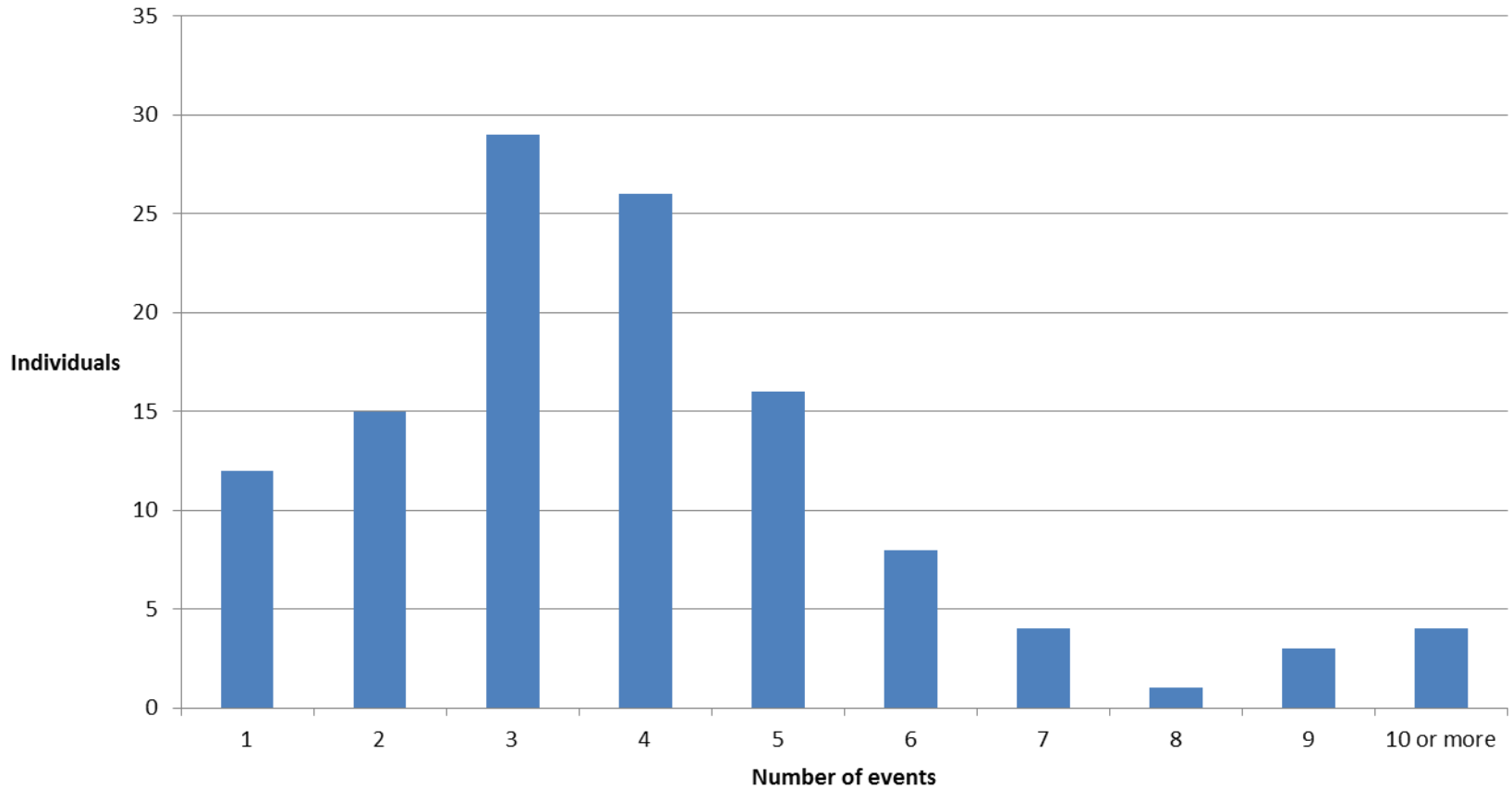
## Parole and Probation

To ensure public safety, offender accountability and victims' rights through effective community corrections.

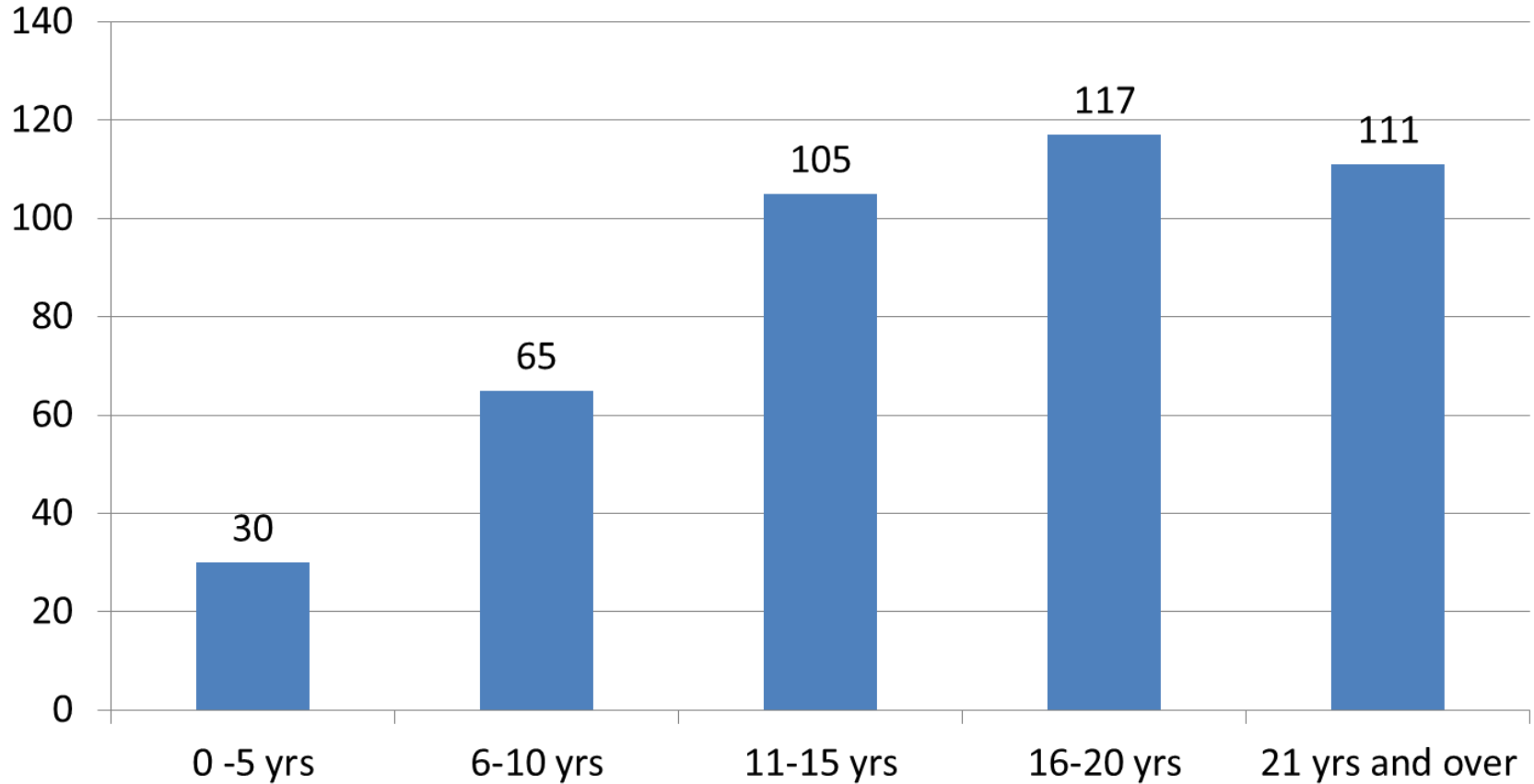
# Adult Brain Injury Screening Results



# Number of Episodes Reported

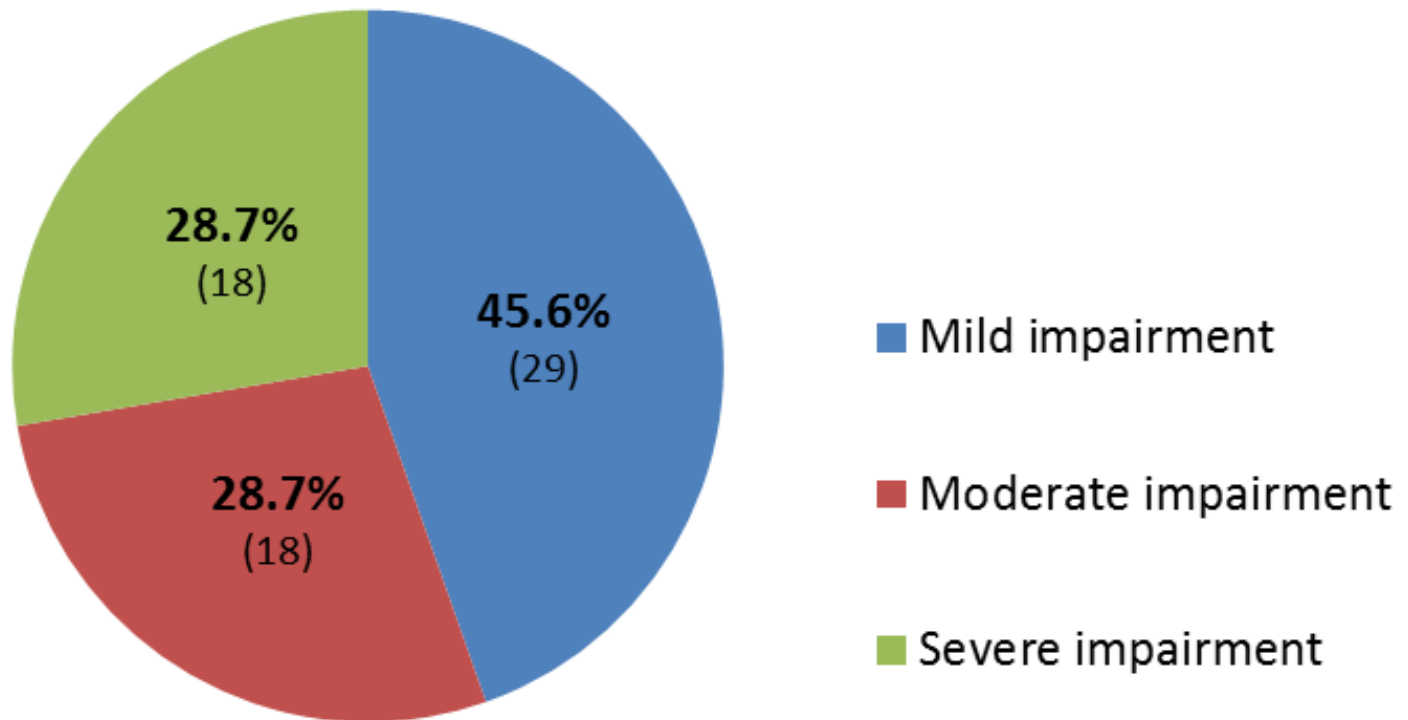


# Ages at Which Episodes Occurred (n=428)



# NeuroCognitive Impairment

## NeuroCognitive Impairment (n=65)



# Other Post Release Services Provided by NeuroResource Facilitator

- Continuing to connect people to resources – this is not always completed by release date
- Assisting someone to find a volunteer job (helps to stay out of trouble until connected with other services)
- Assisting someone with medical management (getting to appointments, keeping info straight, sometimes life threatening conditions)
- Connecting individuals for sobriety resources
- Crisis management
- Working with parole on other referrals (workforce development, housing referrals)
- Coordinating and managing issues in halfway houses



# ACL: Common Barriers to Access to TBI Care

- ❑ Lack of information regarding available services and supports
- ❑ A shortage of healthcare professionals who have training in TBI (specifically, an ability to identify TBI and treat the resulting symptoms)
- ❑ The absence of a TBI diagnosis or the assignment of an incorrect diagnosis
- ❑ TBI services spread across a variety of agencies resulting in services being difficult for families to find and/or navigate

# Brain Injury Education, Training and Consultation Project



Bucks County Youth Detention Center  
Montgomery County Youth Detention Center

# ACL Grant Activities

- Screening to identify individuals with ABI
- Building a trained ABI workforce
- Providing information about ABI to families and referrals to appropriate service providers
- Facilitating access to services through resource facilitation

# Goals of the project

- Provide brain injury education, training and consultation to:
  - Detention Center Staff
  - Families
  - Schools
  - Probation Officers
  - Residential Treatment Facilities
  - Community Providers
  - Link to OVR

# Specific Objectives

- Identify youth with brain injury through screening and neurocognitive testing
- Utilize information gleaned from neurocognitive evaluation activities to plan and guide the delivery of interventions that will best address the needs of students with cognitive impairments
- Provide NeuroResource Facilitation to make connections to brain injury resources in the community

# Screening for History of Brain Injury

## OSU-TBI-ID (Corrigan & Bogner, 2007)

- Semi-structured interview instrument
- Designed to screen for acquired brain injury
- Administered by a trained staff person who is familiar with TBI and has training in basic interviewing techniques
- Supplemented with questions about education history and performance as well as symptoms

# OSU Supplement – Other CNS Involvement

- Questions about non-traumatic conditions that could cause brain injury
  - Epilepsy or seizure disorder
  - Oxygen deprivation (anoxia)
  - Brain infections such as meningitis, encephalitis
  - Stroke
  - Exposure to toxic chemicals

# OSU-TBI-ID Scoring (Corrigan & Bogner, 2007)

- **WORST** — there has been one moderate or severe TBI (i.e., any TBI with 30 minutes or more loss of consciousness)
- **FIRST** — TBI with any loss of consciousness before age 15
- **MULTIPLE** — had 2 or more TBIs close together, including a period of time when they experienced multiple blows to the head even if apparently without effect
- **RECENT** — a mild TBI in recent weeks or a more severe TBI in recent months
- **OTHER SOURCES** — any TBI combined with another way that their brain has been impaired



# NeuroCognitive Testing

- Administered to individuals who screen positive for an event that could have caused a brain injury
- Goal is to determine whether there are impairments associated with the events that are likely to interfere with success in the community



# Case Example: Juvenile

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- 16 year old youth
- 3 possible events on screening, including a concussion “that changed everything”
- Severe neurocognitive impairment on testing
- Evidence of post-concussion symptoms
- Referrals to BrainSTEPS, OVR, and medical specialists in brain injury
- Lengthy detention with release to on-site youth placement

# NeuroCognitive Testing

- Wide Range Assessment of Memory and Learning-Second Edition (WRAML-2)
- Wechsler Individual Achievement Test-Third Edition (WIAT-III) - Reading Comprehension and Math Problem-Solving
- Behavior Rating Inventory of Executive Function, 2<sup>nd</sup> Edition-Self-Report Version (BRIEF-2-SR)
- Delis-Kaplan Executive Functioning System (D-KEFS)

# Summary WRAML-2 Performance:

	Immediate Percentile	Range	Delayed Percentile	Range	Recognition Percentile	Range
<b>Story Memory</b>	9 <sup>th</sup> Percentile	Low Average Range	9 <sup>th</sup> percentile	Low Average Range	5 <sup>th</sup> percentile	Borderline Range
<b>Design Memory</b>	2 <sup>nd</sup> percentile	Borderline Range			2 <sup>nd</sup> percentile	Borderline Range
<b>Verbal Learning</b>	5 <sup>th</sup> percentile	Borderline Range	5 <sup>th</sup> percentile	Borderline Range	1 <sup>st</sup> percentile	Extremely Low Range
<b>Picture Memory</b>	2 <sup>nd</sup> percentile	Borderline Range			1 <sup>st</sup> percentile	Extremely Low Range

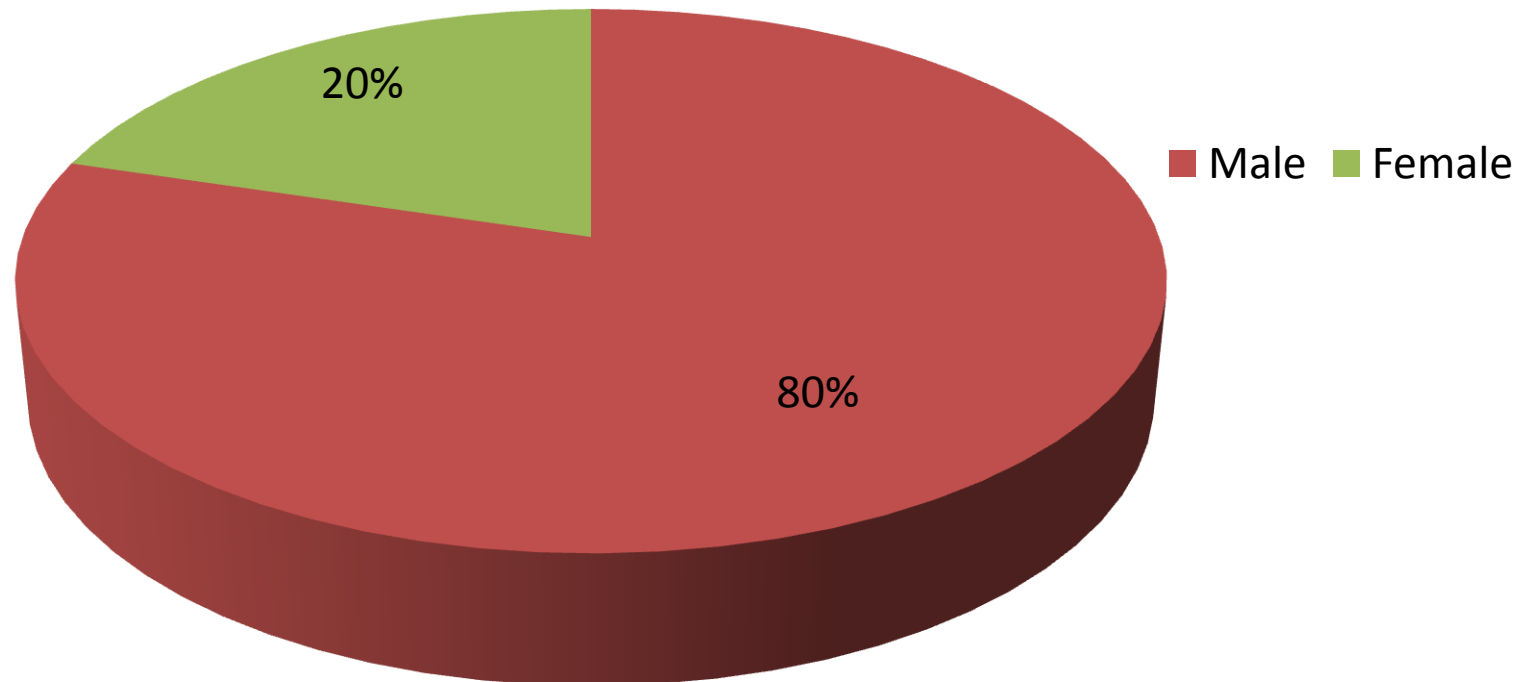
# NeuroCognitive Testing

- **Visual-Motor Sequencing** - performance on the Trail Making Test of the D-KEFS indicates a weakness in letter sequencing - Scaled score was a 4, which falls in the Borderline range
- **Disinhibition** - performance on the Color-Word Interference Test of the D-KEFS indicates a weakness in inhibiting automatic verbal responses, as well as a strength in cognitive flexibility - Scaled scores ranged from 4 to 5, which fall in the Borderline range

# Juvenile Justice Current Results

Screening (n=256)

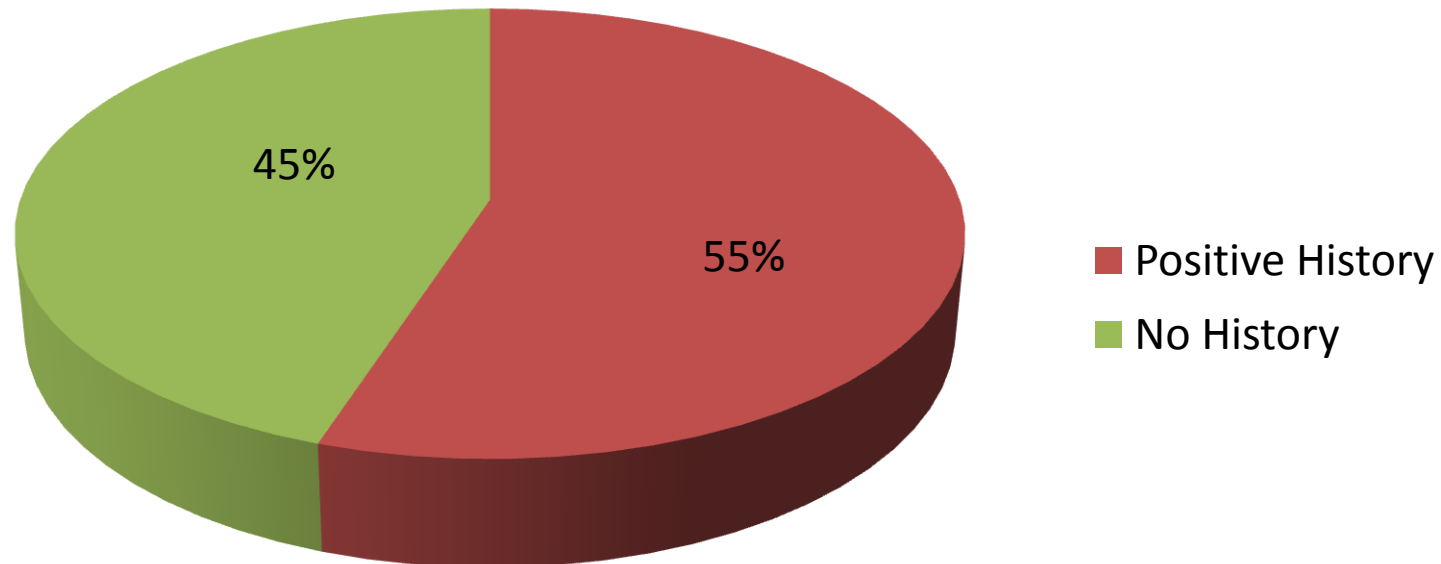
- Ages ranged from 12 years to 20
- 80% male, 20% female



# Juvenile Justice Current Results

## Screening Outcomes

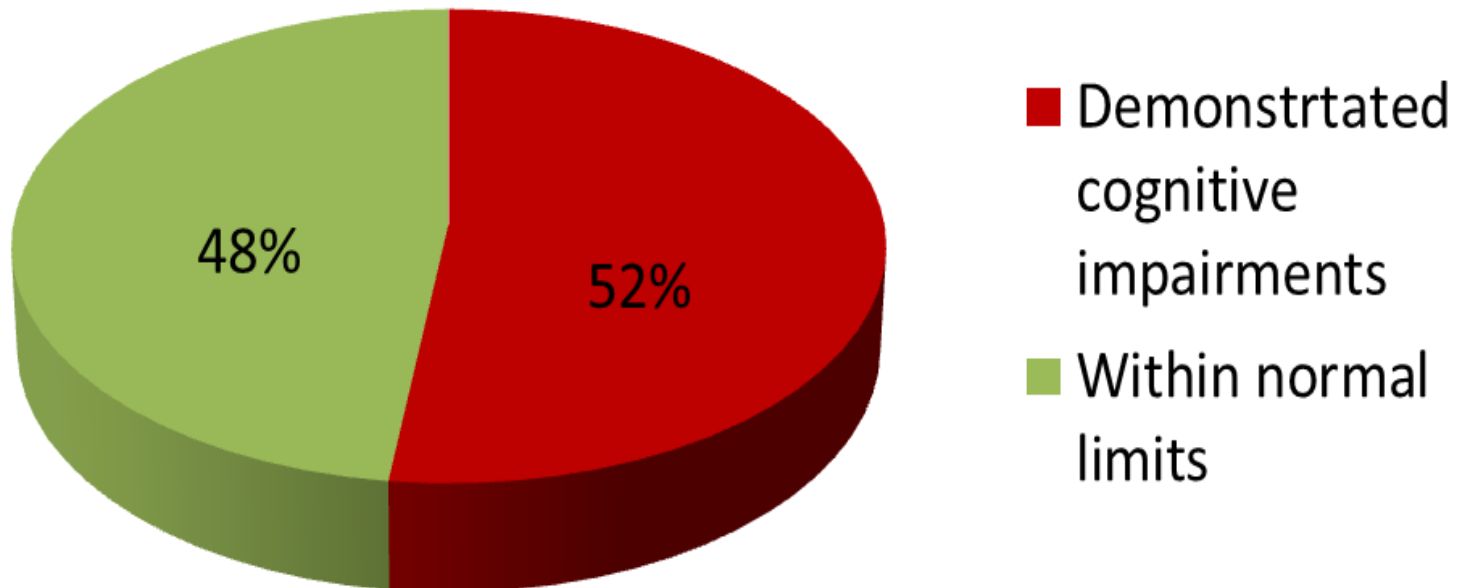
- 55% Positive History BI Event
- 45% No History BI Event
- Average # BI Events = 2.8 per juvenile



# Juvenile Justice Current Results

## *Cognitive Testing Outcomes*

- 52% demonstrated cognitive impairments
- 48% within normal limits

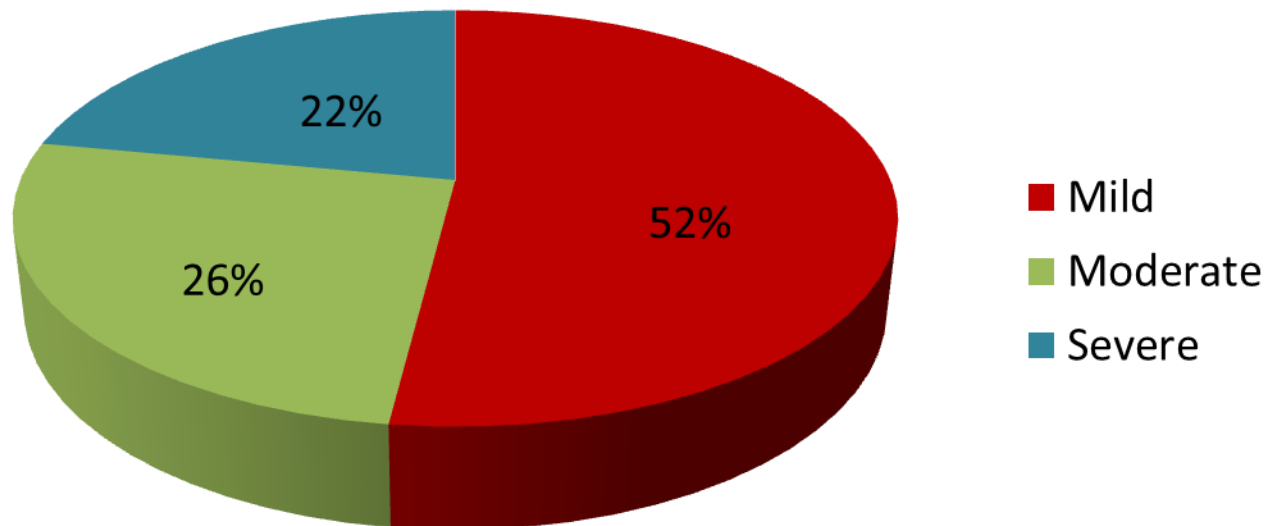




# Juvenile Justice Current Results

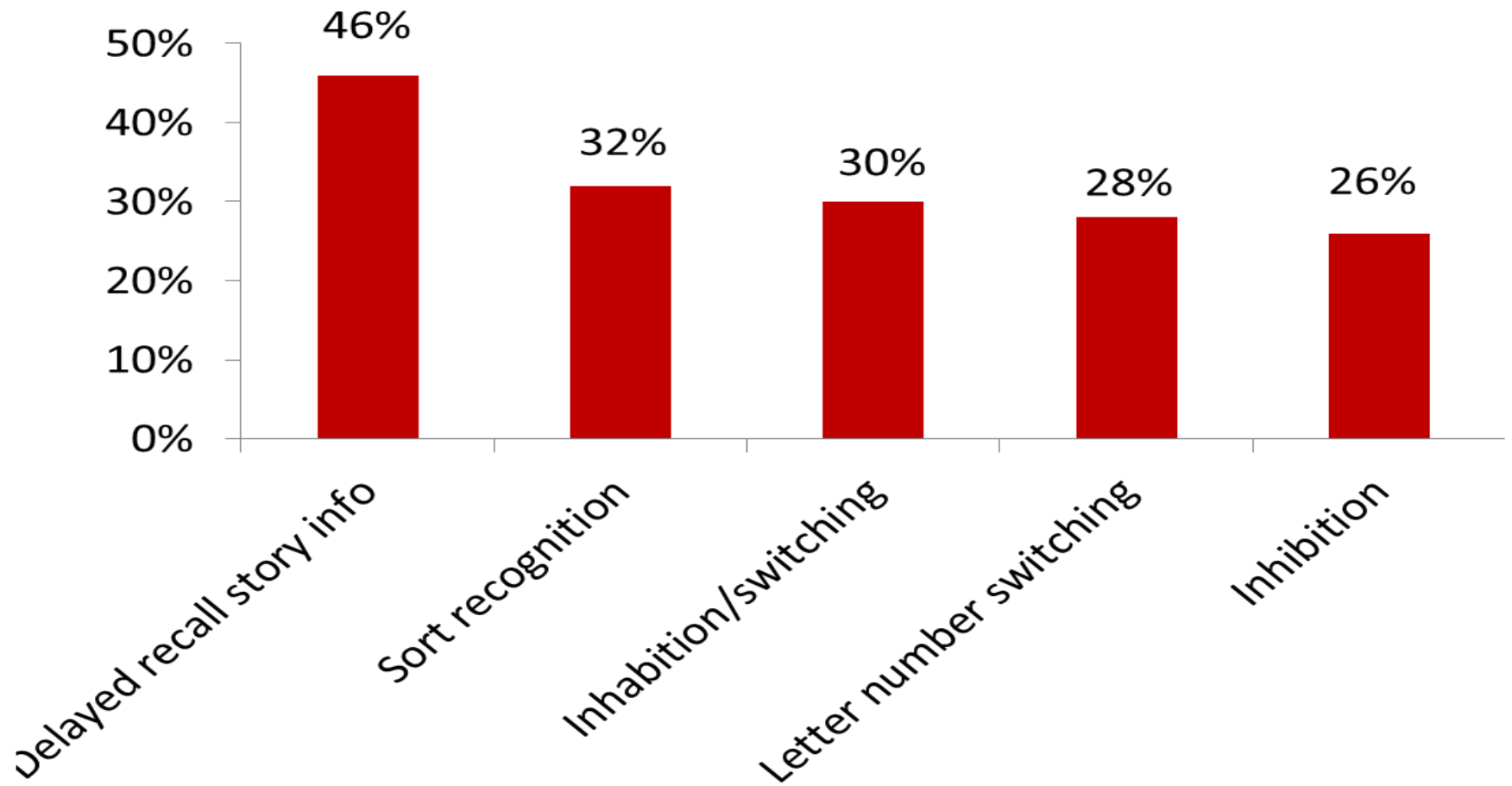
## *Overall level of impairment*

- Mild Impairment – 52%
- Moderate Impairment – 26%
- Severe Impairment – 22%



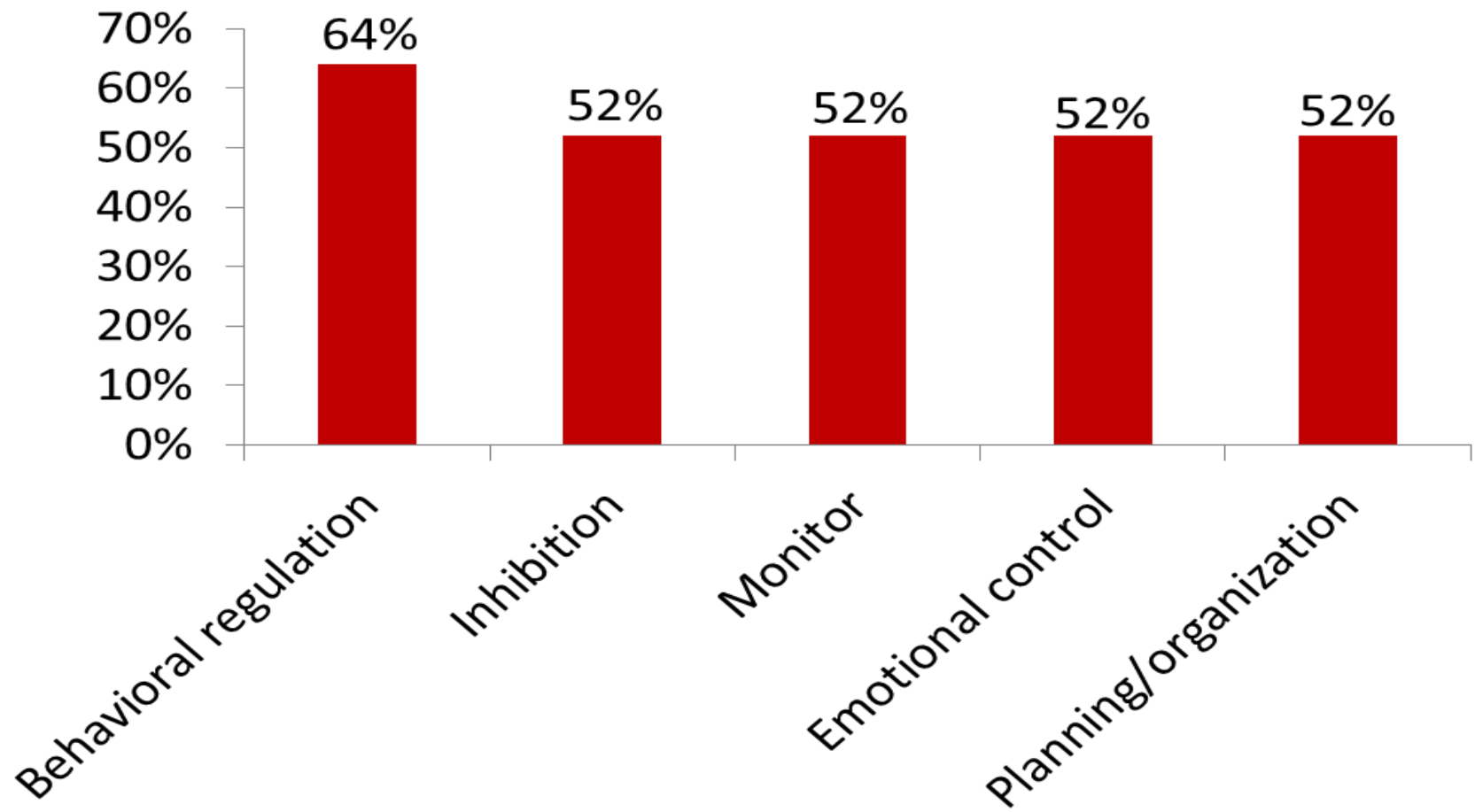
# Juvenile Justice Current Results

## Cognitive Testing - Common Impairments



# Juvenile Justice Current Results

## *Cognitive Testing Self-Reported Outcomes*



# NeuroResource Facilitation

- Provide education on brain injury to adolescent and family/support system
- Make connections to resources:
  - ▣ School Re-entry Supports – BrainSTEPS in PA
  - ▣ Medical Rehabilitation/Community Re-Entry Programs/Vocational Rehabilitation Services for supported employment
  - ▣ Community Colleges
  - ▣ Work-oriented technical and training programs
  - ▣ WIOA Job Shadowing and Work Based Learning Experiences

# NeuroRehabilitation Services That Can Help

- Post Acute Rehabilitation Services
  - Outpatient including PT, OT, SP, NeuroPsych, Physiatry
  - Community Re-Entry Services including Return to School, Return to Work, Return to Life
  - Community Residential Programs
  - Structured Day Programs, including Clubhouse, Vocational
  - Supported Employment Programs, including Job Development, Job Placement, Job Coaching
  - Cognitive Rehabilitation

# Alternative Juvenile Models

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- Montgomery & Bucks Detention Centers
- Lloydsville Youth Development Center
- Butler Judge's Program
- Develop Probation's Capacity

# Next Steps

- Embed OSU-TBI-ID (Corrigan & Bogner, 2007) into Health Screening System used by contracted provider for most Juvenile Justice programs statewide
- Develop a program that can be embedded in Probation and implement statewide
- Make screening for brain injury a required service in schools, so that we can catch changes in brain function earlier, before they lead to drop out, substance abuse, and a lifetime of recidivism

# Questions?

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