MANDATED BENEFIT REVIEW OF HOUSE BILL 1151 AND SENATE BILL 742

SUBMITTED TO THE 194th GENERAL COURT:

AN ACT RELATIVE TO COGNITIVE REHABILITATION FOR INDIVIDUALS WITH AN ACQUIRED BRAIN INJURY

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Mandated Benefit Review of House Bill (H.B.) 1151 and Senate Bill (S.B.) 742 Submitted to the 194th General Court

An Act Relative to Cognitive Rehabilitation for Individuals with an Acquired Brain Injury

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1.0 Executive Summary Executive Summary: H.B. 1151 and S.B. 742 "An Act relative to cognitive rehabilitation for individuals with an acquired brain injury"

The Massachusetts Legislature's Committee on Financial Services referred House Bill (H.B.) 1151[1] and Senate Bill (S.B.) 742,[2] both titled "An Act relative to cognitive rehabilitation for individuals with an acquired brain injury," to the Massachusetts Center for Health Information and Analysis (CHIA) for review. This report references H.B. 1151 and S.B. 742 together and hereafter as "the bill."[i]

As submitted to the 194th General Court of the Commonwealth of Massachusetts, the bill would require health insurers to provide coverage for medically necessary services related to cognitive rehabilitation for individuals with acquired brain injury (ABI), including cognitive rehabilitation therapy, cognitive communication therapy, neurocognitive therapy, neurobehavioral, neuropsychological, neurophysiological, and psychophysiological testing and treatment, neurofeedback therapy, functional rehabilitation therapy and remediation, and community reintegration services. Coverage must extend to all relevant settings, including inpatient, outpatient, post-acute residential, day treatment, and home- or community-based programs, to the same extent as services delivered in traditional healthcare facilities. Insurers cannot deny coverage solely because services are delivered outside a hospital or by qualified providers participating in approved brain injury rehabilitation programs. Deductibles, copayments, or coinsurance for these services cannot exceed those applied to similar services in traditional healthcare settings, and there shall be no lifetime or unreasonable annual limits on the number of days or sessions of treatment. In addition, the bill would require the commissioner of insurance to ensure that health benefit plan issuers provide adequate training to personnel responsible for preauthorization of coverage and utilization review for ABI-related services.

1.1 What is Cognitive Rehabilitation for ABI?

ABI refers to any injury to the brain that occurs after birth, caused by factors such as traumatic events, stroke, lack of oxygen, tumors, toxins, infections, or metabolic and endocrine disorders.3 Traumatic brain injury (TBI) is a subset of ABI resulting from external forces, including falls, motor vehicle accidents, or assaults, while non-traumatic ABI include strokes, anoxic/hypoxic injuries, tumors, or infections.4 Both traumatic and non-traumatic ABI can result in cognitive impairments affecting memory, executive functioning, and attention.5 Cognitive rehabilitation encompasses the set of services that help individuals who have ABI improve brain functioning that has been impaired as a result of ABI such as attention, reasoning, problem solving, communication, and visual processing. The goal of cognitive rehabilitation is to reduce cognitive impairments and help individuals regain independence, enabling them to return to daily life and community activities without requiring long-term institutional care or ongoing supervision for routine tasks.[6,7]

[i] The language is nearly identical in both bills (the house bill includes language that "A health benefit plan may not deny benefits for the coverage required based solely on the fact that the treatment or services are provided at a facility other than a hospital)."

1.2 Current Coverage

Under the Affordable Care Act (ACA), non-legacy individual and small group health plans are required to cover Essential Health Benefits (EHBs), including rehabilitative and habilitative services and devices. This EHB category encompasses services intended to help individuals regain, maintain, or improve skills and functioning following an injury or illness. Cognitive rehabilitation services for individuals with ABI may fall within this category when they are provided to restore or improve cognitive, communication, or functional impairments resulting from the injury. Coverage is typically subject to medical necessity criteria and may be delivered through related covered services such as speech therapy, occupational therapy, neuropsychological services, and home health care. While the ACA does not expressly mandate coverage of cognitive rehabilitation as a distinct, standalone benefit, there is notable overlap with rehabilitative and habilitative services.[8,9,10]

In Massachusetts, coverage for rehabilitative services includes the following EHBs with specified applicable quantity limits:

- Inpatient Hospital Services; Covered in rehabilitation hospitals with a 60-day benefit limit per member per calendar year.
- Outpatient Rehabilitation Services; Includes occupational and physical therapy with a combined limit of 60 visits per year.
- Rehabilitative Speech Therapy; Covered with no quantitative limit on services. Certain services have no limit when provided to treat autism spectrum disorders or as part of covered home health care.
- Rehabilitative Occupational and Physical Therapy; Combined 60-visit annual limit for outpatient services.[11,12]

1.3 Analysis Overview

The legislative sponsors indicated that the intent of the bill is to standardize insurance coverage for medically necessary cognitive rehabilitation services for individuals with ABI. The bill seeks to ensure consistent coverage across insurers for a defined continuum of cognitive rehabilitation and related neurobehavioral and neuropsychological services when clinically indicated. The analysis evaluates the potential impact of this requirement on health insurance premiums by estimating incremental utilization and costs relative to current coverage practices. The analysis focuses on individuals with a recent inpatient hospital discharge associated with an ABI diagnosis, as this population is most likely to require post-acute cognitive rehabilitation services.

1.4 Estimated Cost of Enactment

Requiring coverage for this benefit by fully insured health plans would result in an average annual increase to the typical member's health insurance premium of between $0.01 and $0.21 per member per month (PMPM) or between 0.001% and 0.025% of premium, over a projection period of five years.

1.5 Efficacy and Access Impact

Cognitive rehabilitation for ABI is highly effective when delivered as a coordinated, evidence-based program. Key components include neuropsychological testing, cognitive rehabilitation therapy (CRT), functional rehabilitation, and community reintegration. Neuropsychological testing guides individualized treatment by assessing cognitive

functioning in individuals with ABI. CRT focuses on attention, memory, communication, and metacognitive strategies to improve cognitive function, independence, and return to work outcomes. Functional rehabilitation reinforces skills in real-world settings, and community reintegration supports participation in daily, social, and occupational activities. Research shows that comprehensive programs combining these elements produce the strongest improvements in cognition, daily functioning, and quality of life for individuals with ABI. Outcomes depend on the intensity and structure of therapy rather than the care setting, with hospital, residential, outpatient, home-based, and telehealth services achieving similar results.[13,14,15]

Access to comprehensive cognitive rehabilitation in Massachusetts remains limited. Many individuals hospitalized because of ABI are discharged home without adequate support.[16] Broader access to structured cognitive rehabilitation reduces long-term disability, supports reintegration, and lowers lifetime healthcare costs. While recovery varies by injury type and severity, early, continuous, and multidisciplinary rehabilitation is essential to maximizing functional outcomes and independence for individuals with ABI.[17,18]

Endnotes

[1] H.B. 1151. An Act relative to cognitive rehabilitation for individuals with an acquired brain injury. **https://malegislature.gov/Bills/194/H1151.**

[2] S.B. 742. An Act relative to cognitive rehabilitation for individuals with an acquired brain injury. **https://malegislature.gov/Bills/194/S742.**

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AN ACT RELATIVE TO COGNITIVE REHABILITATION FOR INDIVIDUALS WITH AN ACQUIRED BRAIN INJURY

MEDICAL EFFICACY ASSESMENT

2.0 Medical Efficacy Assessment

The bill requires health insurers to provide coverage for medically necessary services related to acquired brain injury (ABI) including, but not limited to, cognitive rehabilitation therapy; cognitive communication therapy; neurocognitive therapy and rehabilitation; neurobehavioral, neurophysiological, neuropsychological and psychophysiological testing and treatment; neurofeedback therapy; functional rehabilitation therapy and remediation; community reintegration services; post-acute residential treatment services; inpatient services; outpatient and day treatment services; home and community-based treatment. The bill would also prevent insurers from denying coverage solely because services are delivered outside a hospital.[ii] Additionally, deductibles, copayments, or coinsurance for these services cannot exceed those applied to similar services in traditional healthcare settings, and there cannot be lifetime or unreasonable annual limits placed on the number of days or sessions of treatment. The bill would also require the commissioner of insurance to ensure health benefit plan issuers provide adequate training to personnel responsible for preauthorization of coverage and utilization review for ABI-related services.[1,2]

The bill sponsors indicated the bill's intent is to mandate coverage for comprehensive cognitive rehabilitation for individuals with ABI. Post-acute rehabilitation is a vital part of effective treatment of ABI and provides an environment for individuals to transition from a hospital setting to independent living. This bill aims to provide comprehensive ABI treatment coverage in Massachusetts, along with practical assistance performing daily tasks, provided in either a residential or outpatient facility. Discussions with experts, combined with information from major Massachusetts health insurers, show a current lack of coverage for post-acute care for individuals with ABI, which this bill aims to rectify, allowing individuals to access comprehensive care throughout their entire recovery journey. For purposes of this analysis, reference to "practical assistance performing daily tasks" is intended to describe structured, goal oriented therapeutic interventions delivered as part of medically necessary rehabilitation services for individuals with acquired brain injury. Such interventions are provided under clinical oversight and are designed to support the re-learning, restoration, or compensation of functional skills impaired by brain injury. The bill does not require coverage of custodial care, room and board, or non-medical assistance with activities of daily living (ADL) when such services are not integral to a covered, medically necessary treatment plan. Coverage remains subject to existing medical necessity standards and utilization review requirements.

M.G.L Chapter 3 §38C charges CHIA with reviewing the medical efficacy of proposed mandated health insurance benefits. Medical efficacy reviews summarize current literature on the effectiveness and use of the treatment or service and describe the potential impact of a mandated benefit on the quality of patient care and health status of the population.

This report proceeds in the following sections:

[ii] The language is nearly identical in both bills (the house bill includes language that "A health benefit plan may not deny benefits for the coverage required based solely on the fact that the treatment or services are provided at a facility other than a hospital)."

2.0 Medical Efficacy Assessment

- 2.1 ABI Background
- 2.2 Applications for Cognitive Rehabilitation Services
- 2.3 Efficacy of Cognitive Rehabilitation Services
- 2.4 Access and Provider Capacity

2.1 ABI Background

As defined in the bill, ABI refers to "any injury to the brain which occurs after birth" including injuries caused by infectious diseases, metabolic or endocrine disorders, decreased oxygen or blood supply to the brain, brain tumors, toxins, stroke, or a TBI.[3,4] The Brain Injury Association of America similarly defines ABI as "an injury to the brain that is not hereditary, congenital, degenerative, or induced by birth trauma…the injury results in a change to the brain's neuronal activity, which affects the physical integrity, metabolic activity, or functional ability of nerve cells in the brain."[5] The bill provides a more detailed definition of ABI, but the causes it identifies are encompassed within the broader categories used by the Brain Injury Association of America. Other sources define ABI more generally, such as any brain injury occurring after birth or as a group of conditions resulting from head trauma. While less specific, these definitions are consistent with the scope and intent of the bill's language.[6,7]

TBI is a subset of ABI caused by trauma to the brain specifically from an external force. The Brain Injury Association of America defines TBI as "an alteration in brain function or other evidence of brain pathology caused by an external force."[8] Falls, assaults, motor vehicle accidents, and sports injuries are common causes of TBI, but any kind of impact trauma can cause a TBI. Non-traumatic brain injuries are also included under ABI but are not considered TBI. Examples of non-TBI include stroke, asphyxiation, aneurysm, tumor, or infectious disease. Injury to the brain from non-TBI is usually caused by lack of blood flow to the brain, but there can be other causes.[9] Both ischemic[iii] and hemorrhagic[iv] strokes show a high rate of post-stroke cognitive impairment, which can be mitigated through cognitive rehabilitation combined with screenings.[10]

TBIs can often cause debilitating long-term impairments to individuals. Reduction of executive functioning and self-awareness are common effects of TBI, though evidence shows that effective cognitive rehabilitation can increase the success and well-being of individuals who have experienced moderate to severe traumatic brain injuries in their daily lives.[11] Aside from strokes and trauma, ABI can also be caused by a range of other issues,[v] the treatment of which is also covered under the bill.

Both traumatic and non-TBI present a notable burden on the Massachusetts healthcare system. In 2019, more than 25,000 MA residents sustained a TBI, resulting in 825 deaths (9.9 per 100,000). Additionally, TBI caused 5,817

[iii] An ischemic stroke occurs when a blood clot blocks a blood vessel in the brain, preventing oxygen from reaching brain cells. This lack of blood flow can lead to cell death, resulting in damage to the brain.
[iv] A hemorrhagic stroke occurs when a blood vessel in the brain breaks and bleeds, leading to damage in brain cells. This type of stroke can be caused by conditions such as high blood pressure or aneurysms.
[v] Other potential causes of ABI include alcohol related brain damage, infection, shaken infant syndrome, and metabolic conditions.

hospital stays (72 per 100,000) and 18,947 emergency department (ED) visits (273 per 100,000).[12] One of the most common causes of non-traumatic ABI is stroke, which creates a significant health impact, especially for older people. While not all strokes result in ABI, strokes are the second most common cause of ABI nationwide.[13] In 2023 there were 15,852 documented strokes in Massachusetts, 11,109 of which were experienced by people at or over the age of 65, with a median age of stroke victims of 73.[14] Of these strokes, the remaining 4,743 were experienced by individuals under the age of 65 who would be covered for cognitive rehabilitation under this bill.

Cognitive impairments and recovery vary depending on the severity of ABI. Brain injuries are commonly described as mild, moderate, or severe. In TBI, severity is often assessed using standardized tools such as the Glasgow Coma Scale, which measures a person's level of consciousness after injury.[15] Non-traumatic ABI, such as stroke, use different assessment tools, but injuries are similarly grouped by severity. For example, the National Institutes of Health Stroke Scale is widely used to assess stroke-related impairment.[16]

Individuals with mild ABI typically experience short-term symptoms that are resolved within one – two weeks, and most do not require formal cognitive rehabilitation.[17] Their recovery can often be managed at home or through limited outpatient care, and long-term symptoms are uncommon. In contrast, individuals with moderate or severe ABI frequently experience more complex cognitive impairments requiring coordinated care from multiple providers over an extended period.[18] For these individuals, recovery often follows a structured pathway, beginning with intensive hospital care, followed by post-acute residential rehabilitation, and later transitioning to home- and community-based services as independence improves. According to experts at the Brain Injury Association of Massachusetts (BIAMA), individuals recovering from stroke spend an average of 77 days in post-acute residential rehabilitation, while those with moderate or severe TBI spend an average of almost 100 days in these settings.[19]

Pediatric cognitive rehabilitation involves considerations that differ from those in adult care. ABI in children can affect the attainment of developmental milestones, so rehabilitation focuses on supporting ongoing cognitive development in addition to addressing impairments. Effective pediatric rehabilitation typically requires coordination among parents, educators, and other caregivers, as a child's family and educational environments play an important role in cognitive functioning and the rehabilitation process.[20,21]

2.2 Applications for Cognitive Rehabilitation Services

Cognitive rehabilitation encompasses the set of services that help individuals with ABI improve attention, reasoning, problem solving, communication, and visual processing. Cognitive rehabilitation also serves to restore cognitive capacity that has been impacted due to ABI.[22] Successful cognitive rehabilitation aims to allow individuals to live independently and successfully reintegrate into their lives without the need to permanently reside in a care facility or require supervision and assistance for daily living.[23]

The bill identifies a range of services that support cognitive rehabilitation, including CRT, cognitive communication therapy, neurocognitive, neurobehavioral, and neurofeedback therapies, functional rehabilitation and remediation, community reintegration and transition services, neuropsychological and psychophysiological testing and treatment, and post-acute residential services. These services are defined in Table 1 below. Some services listed involve discrete clinical therapies delivered by medical professionals, while others reflect more comprehensive supports, such as assistance with daily activities including walking, eating, and toileting, which are commonly provided in post-

acute or residential rehabilitation settings. CRT represents a core therapeutic modality within cognitive rehabilitation and is typically delivered through a combination of services provided concurrently, and distinctions between individual service types may vary across providers and sources.

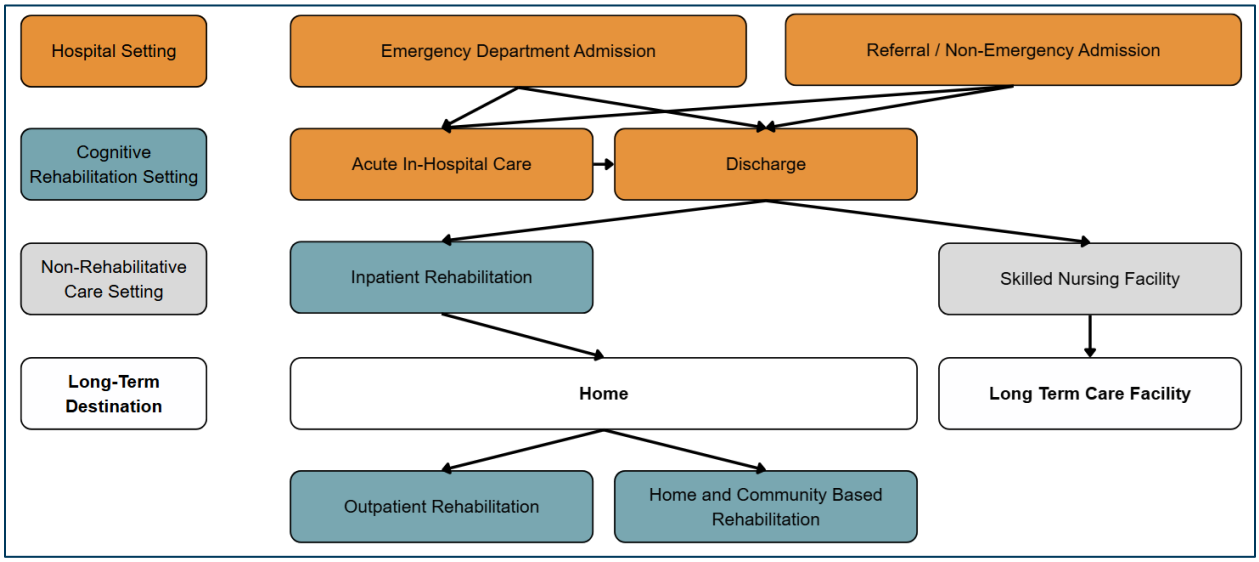
Table 1. Definitions of Relevant Services Provided Under H.B. 1151/S.B. 742

TERM	DEFINITION PROVIDED UNDER H.B. 1151[24]/S.B. 742[25]
Cognitive communication therapy	"treats problems with communication which have an underlying cause in a cognitive deficit rather than a primary language or speech deficit."
Cognitive rehabilitation therapy (CRT)	"a process of re-learning cognitive skills essential for daily living through the coordinated specialized, integrated therapeutic treatments which are provided in dynamic settings designed for efficient and effective re-learning following damage to brain cells or brain chemistry due to brain injury."
Community reintegration services	"provide[s] incremental guided real-world therapeutic training to develop skills essential for an individual to participate in life: to re-enter employment; to go to school and engage in other productive activity; to safely live independently; and to participate in their community while avoiding re-hospitalization and long-term support needs."
Functional rehabilitation therapy and remediation	"a structured approach to rehabilitation for brain disorders which emphasizes learning by doing and focuses re-learning a specific task in a prescribed format, with maximum opportunity for repeated correct practice. Compensatory strategies are developed for those skills which are persistently impaired, and individuals are trained on daily implementation. To ensure acquisition and use, focus is set on re-learning those skills essential for safe daily living in the environment in which they will be used: home and community settings."
Neurobehavioral therapy	"a set of medical and therapeutic assessment and treatments focused on behavioral impairments associated with brain disease or injury and the amelioration of these impairments through the development of pro-social behavior."
Neurocognitive therapy	"treatment of disorders in which the primary clinical deficit is in cognitive function which has not been present since birth and is a decline from a previously attained level of function."
Neurofeedback therapy	"a direct training of brain function to enhance self-regulatory capacity or an individual's ability to exert control over behavior, thoughts and feelings. It is a form of biofeedback whereby a patient can learn to control brain activity that is measured and recorded by an electroencephalogram."
Neuropsychological testing	"a set of medical and therapeutic assessment and treatments focused on amelioration of cognitive, emotional, psychosocial and behavioral deficits caused by brain injury."
Psychophysiological testing and treatment	"a set of medical and therapeutic assessment and treatments focused on psychophysiological disorders or physical disorders with psychological overlay."
Post-acute residential treatment	"includes integrated medical and therapeutic services, treatment, education, and skills training within a 24/7 real-world environment of care- a home and community setting."

Figure 1 depicts typical care pathways for individuals with ABI and the settings in which care is delivered. Individuals may enter the care continuum through an ED admission, referral, or non-emergency admission. Emergency admissions generally involve acute in-hospital care followed by discharge planning. After discharge, individuals may transition to inpatient rehabilitation, a skilled nursing facility, or return home, depending on injury severity and functional needs. Those discharged home may continue recovery through outpatient rehabilitation or home- and

community-based rehabilitation services.[26,27,28] This figure illustrates that care pathways can vary and may change over time as an individual's needs and level of independence evolve.

Figure 1. Care Delivery Settings



Cognitive rehabilitation care can be delivered in several settings depending on the needs of the individual. Acute care (short-term care for a severe injury or illness) for ABI is provided in a hospital setting and is not considered cognitive rehabilitation under the scope of this bill. After an individual is discharged from a hospital, there are several options for next steps in treatment. Inpatient rehabilitation facilities are the most intensive, combining cognitive rehabilitation with medical oversight and 24-hour nursing. Some individuals can move to less intense delivery settings quickly, such as an outpatient rehabilitation clinic. Individuals discharged from acute care are commonly transferred to a skilled nursing facility or assisted living facility. While both inpatient rehabilitation facilities and skilled nursing facilities provide care for ABI, experts at BIA-MA emphasize that skilled nursing facilities often focus more on physical disability and recommend that individuals who need cognitive rehabilitation be moved to a residential care facility that specializes in cognitive rehabilitative care. Skilled nursing facilities primarily provide moderate, nurse-led care focused on physical needs with limited therapy, while post-acute inpatient rehabilitation facilities offer intensive, multidisciplinary rehabilitation targeting both physical and cognitive recovery to restore function and independence.[29]

Once an individual can live independently, they can transition to community-based rehabilitation, telehealth rehabilitation, or home health services to continue their care progression. Community-based rehabilitation programs provide help transitioning individuals from a residential environment with returning to work, education, and community and family life, focusing on higher-level executive skills and real-world tasks.[30,31] If an individual cannot access community-based rehabilitation, due to difficulty traveling or other obstacles, care can also be provided via telehealth or home health services. Effective cognitive rehabilitation is tailored to the individuals' needs and will often combine several delivery settings and a variety of services throughout their recovery process. Helping to ensure individuals have access to the care they need in the location that best suits them is vital to creating positive long-term outcomes.[32,33]

Cognitive rehabilitation services such as CRT, functional rehabilitation, and community reintegration services are delivered through interdisciplinary rehabilitation teams, most commonly involving speech-language pathologists, occupational therapists, physical therapists, and psychologists/neuropsychologists, each operating within their professional scope to address complementary aspects of recovery. Neuropsychological testing is provided by licensed clinical neuropsychologists as a diagnostic service that informs treatment planning, rehabilitation targeting, and functional accommodation rather than serving as a therapeutic intervention itself.[34,35]

Neuropsychological Testing

Neuropsychological testing, often the first step in cognitive rehabilitation, is a method that assesses cognitive functioning in individuals with ABI. Typical neuropsychological testing involves a variety of functional assessments targeted at every relevant area of cognition such as processing speed, reasoning, judgment, problem solving, spatial thinking, and communication. Neuropsychological tests[vi,36,37] are performance based and require individuals to demonstrate various skills in the presence of an examiner who will record their proficiency. Combining the results of neuropsychological testing with brain imaging allows providers to properly determine an individual's areas of cognitive impairment and create a treatment plan targeted at addressing those impairments specifically. Neuropsychological testing is clinically indicated at the beginning of cognitive rehabilitation for individuals with cognitive impairment to inform delivery of future treatments.[38] Testing can also be utilized later in the care continuum to ascertain the progress of rehabilitation and effective treatment.[39,40]

CRT

CRT encompasses various therapeutic services provided as part of a holistic program to improve cognitive functioning. This technique is based on the repeated exercise of neural circuits to reinforce positive neural pathways to enable an individual to learn and practice skills and reverse cognitive impairment through neuroplasticity. CRT is clinically indicated and recommended for individuals with documented or suspected cognitive impairment.[41] Clinicians will determine which type of CRT is needed depending on the areas of impairment of the individual. Neuropsychological tests are used to identify areas of impairment, followed by targeted therapy to improve functioning. Due to the range and uniqueness of impairments across individuals with ABI, it is difficult to standardize categories of treatment, but subcategories can be defined covering therapeutic interventions targeted at specific impairments. Neurocognitive therapy focuses on reducing impairments in mental functions such as memory, attention, executive functioning, and problem solving. Cognitive communication therapy focuses on speech, language, and general communication. Neurobehavioral therapy focuses on the relationship between the brain and behavior, attempting to improve behavior patterns through the brain.[42] Each specific type of therapy is targeted at a specific skill or part of the brain where an individual is impaired because of ABI.[43] CRT is utilized throughout the duration of post-acute rehabilitation in combination with functional rehabilitation, and can be used in both residential and home/community-based settings. Other forms of rehabilitative therapy not explicitly referred to in the bill could also be required to be covered provided their use is supported by guidelines or research, and they fall under the definition of CRT.

[vi] Some common functional neuropsychological tests include the Executive Function and Performance Test (EFPT) and the Multiple Errands Test (MET), though other frameworks or customized tests can also be used.

Functional Rehabilitation

Functional rehabilitation treatment and remediation aim to improve the ability of individuals with ABI to return to their daily lives by assisting them in performing routine tasks and reinforcing skills such as walking, cooking, driving, returning to work, etc. Functional rehabilitation is considered the most flexible area of treatment and can vary widely depending on the needs of the individual. An individual with severe impairments might require physical assistance performing simple tasks such as walking, whereas someone with less severe impairments might need more organizational help scheduling their day. It is important that individuals can effectively practice the skills and behaviors they learn through CRT and implement them into daily life. An effective cognitive rehabilitation environment will provide help for individuals in the areas in which they are deficient. In addition to medical or therapeutic intervention, routine assistance and supervision while going about regular tasks has been shown to improve outcomes for individuals with ABI. Functional rehabilitation is clinically indicated for individuals who are receiving CRT to maintain skills and behaviors learned through therapy and utilized in practical settings. Functional rehabilitation can be used throughout the duration of post-acute cognitive rehabilitation.[44] A holistic cognitive rehabilitation program can include functional independence treatments such as daily group discussions with other individuals, assistance with scheduling and planning, discussions with family and friends to help them understand the needs of the individual, and assistance and supervision when going about daily life tasks.[45]

Community Reintegration

Community reintegration services aim to help individuals in the later stages of cognitive rehabilitation reenter their communities, families, and workplaces as they transition out of post-acute care and back into independent life. Effective cognitive rehabilitation requires individuals to be able to live independently and rebuild their social lives to provide the best treatment outcomes. Community reintegration involves caregivers assisting individuals with social behaviors, as well as working with their friends, family, or coworkers to create a plan for reintegration and informing them on how to enable the individual to successfully return to their life. Community reintegration is clinically indicated for individuals who have reduced ability to resume/maintain work, school, community activities, or other life roles. While community reintegration can be utilized throughout the duration of post-acute rehabilitation, it is most often used in the later phases when an individual is transitioning from a residential facility to independent living.[46,47]

2.3 Efficacy of Cognitive Rehabilitation Services

Guidelines:

Several organizations provide guidelines for cognitive rehabilitation, with the most prominent being the International Cognitive Rehabilitation Expert Panel (INCOG) and the American Congress for Rehabilitative Medicine (ACRM). INCOG 2.0 offers detailed, evidence-based recommendations for TBI rehabilitation, grading 80 treatments from A (strong evidence) to C (expert opinion). ACRM provides broader guidance, including non-traumatic ABI, using a three-level grading system: Practice Standard (high-quality evidence), Practice Guideline (moderate evidence), and Practice Option (limited evidence). Together, these guidelines combine expert consensus and research to inform the efficacy of cognitive rehabilitation interventions and guide clinical practice.[48,49]

To analyze the efficacy of the services comprising cognitive rehabilitation, as considered under the bill, the services have been grouped into four main categories: neuropsychological testing, CRT, functional rehabilitation, and

community reintegration. Because the efficacy of these interventions is dependent on a care continuum including multiple modalities of treatment, an evaluation of the overall efficacy of comprehensive cognitive rehabilitation is also included.

Neuropsychological Testing

A 2018 systematic review of studies on neuropsychological assessment (testing) found that assessment increases the accuracy of diagnosis, assists with treatment planning, and improves individual outcomes. Both physicians and individuals reported substantial benefits of neuropsychological assessment.[50] Several studies found that neuropsychological testing can accurately predict a variety of outcomes for individuals with ABI, such as executive functions, processing speed/attention, and visual memory.[51,52]

Both INCOG and ACRM consider neuropsychological testing to be a vital tool that guides effective treatment plans for individuals with ABI. INCOG 2.0 Guidelines recommends that after acute impacts of ABI have been addressed, individuals should receive a detailed assessment of their cognition. Similarly, ACRM states in their definition of cognitive rehabilitation that a successful plan is based on "an assessment and understanding of the person's brain-behavior deficits." [53,54]

CRT

Within the broader framework of cognitive rehabilitation, CRT has been shown to be effective in supporting recovery for individuals with acquired brain injury by improving memory, communication, executive function, and overall quality of life. Individuals who receive CRT are more likely to return to work, school, or independent living, reflecting its impact on long-term recovery and independence. CRT is also considered safe, with a low risk of adverse events when delivered by licensed providers in outpatient, home-based, or residential settings. In addition, CRT is cost-effective, as access reduces the likelihood of falls, behavioral crises, hospital remissions, and long-term care needs. A 2024 quantitative review of CRT for individuals with ABI found that individuals who received CRT were 17 – 45% more likely to return to work, approximately twice as likely to be employed 12 months post injury, approximately twice as likely to live at home, and were discharged an average of 17 days sooner from acute care and 29 days sooner from inpatient rehabilitation.[55,56,57]

The INCOG 2.0 Guidelines recommend CRT for individuals with moderate to severe TBI. ACRM also recommends CRT. Attention training, visual scanning training, compensatory strategies for memory deficits, language therapy, social-communication interventions, metacognitive strategy training, and comprehensive-holistic neuropsychological rehabilitation are all given a Practice Standard grade by ACRM. Furthermore, a 2009 quantitative analysis demonstrated statistically significant benefits for a variety of CRT modalities. Attention, language, and visuospatial training yielded the largest increase in positive outcomes.[58,59,60]

While overall evidence strongly supports the use of CRT in treatment of ABI, some results for CRT for individuals with non-traumatic ABI, such as strokes, are mixed. A 2016 review of 13 studies on memory focused on CRT for individuals who experienced a stroke found a significant short-term improvement in memory, but no significant long-term impact.[61] Other reports cite the efficacy of CRT in a more general review of cognitive rehabilitation overall, but do not study its effectiveness as a specific therapeutic modality.[62] Despite some gaps in evidence, CRT is overall

supported by current evidence and guidelines, and the services included within its umbrella (cognitive communication therapy, neurocognitive therapy, neurobehavioral therapy, and neurofeedback therapy) are considered medically necessary and clinically appropriate for the treatment of cognitive impairments resulting from ABI. [63,64,65]

Functional Rehabilitation

Functional rehabilitation involves practicing skills learned through CRT and other interventions for ABI. This type of rehabilitation has been shown to be an effective element of some cognitive rehabilitation strategies, but overall evidence is mixed. A comprehensive meta-analysis on functional rehabilitation for individuals with strokes found significant improvement in activities of daily living (ADLs), when compared to treatment plans that did not incorporate functional rehabilitation.[66] Findings for functional rehabilitation for individuals with TBI are more mixed. A 2023 randomized controlled trial on functional rehabilitation delivered in the home found no significant benefit.[67] A 2017 comprehensive analysis of cognitive rehabilitation aimed at improving functional outcomes for individuals with TBI found no significant benefit over nine studies.[68]

INCOG and ACRM recommend that individuals practice skills learned through CRT in real-world scenarios to solidify their abilities and identify weaknesses. INCOG recommends functional task training paired with metacognitive strategy training to produce better outcomes than simply therapy alone. Interventions should be practiced in real-world scenarios such as work, home, and community settings. ACRM similarly recommends practicing cognitive strategies in real-world scenarios to improve functional outcomes.[69,70] Combining functional rehabilitation with CRT has been shown to produce the best outcomes for individuals undergoing cognitive rehabilitation. Research, literature, and guidelines all indicate that functional rehabilitation is a medically necessary and clinically appropriate part of treatment for individuals with cognitive impairments resulting from ABI.[71,72]

Community Reintegration Services

A 2022 systematic review of community reintegration interventions for individuals with ABI found highly variable outcomes across treatments. This review included 49 studies on community-based intervention, encompassing holistic, physical, and specific interventions. Separate analyses of all three forms of interventions found no significant overall effect on either functional outcome or quality of life for any category. Researchers emphasized that the lack of conclusive results does not imply the treatments are not effective but that more rigorous and complete studies on community reintegration services are needed to determine their effectiveness in the treatment of ABI.[73]

INCOG and ACRM do not view community reintegration as a separate treatment, but reintegration with an individual's community is emphasized as a core goal of treatment by both organizations. INCOG gives an "A" grade to communication partner training, communication strategy, and metacognitive awareness training as a part of community reintegration. Additionally, INCOG mentions that evaluation and treatment should be culturally responsive and flexible based on an individual's cultural/linguistic background, which impacts how to optimally deliver treatment. ACRM designates comprehensive-holistic neuropsychological rehabilitation as a Practice Standard for all individuals with ABI, with a specific emphasis on treatments that target interpersonal and emotional functioning. While INCOG and ACRM do not view community reintegration as a separate service from CRT, they recommend this treatment to help individuals successfully return to their communities.[74,75]

Comprehensive Cognitive Rehabilitation

Comprehensive cognitive rehabilitation refers to coordinated, interdisciplinary treatment programs that integrate CRT, functional skills training, psychosocial support, and real-world application of strategies to address the broad cognitive, behavioral, and functional deficits associated with ABI. Comprehensive programs combine evidence-based approaches such as metacognitive strategy instruction, memory and attention training, goal-directed problem solving, compensatory strategy use, emotional regulation training, and community-oriented skill development.[76] These programs are individualized based on neuropsychological assessment and are delivered across clinical environments including outpatient rehabilitation, day treatment programs, and residential settings to promote the application of skills to daily life. The ACRM specifically designates comprehensive-holistic neuropsychological rehabilitation as a Practice Standard, reflecting substantial evidence demonstrating its effectiveness in improving cognitive functioning, reducing disability, and supporting long-term recovery after ABI.[77] Additionally, experts at the BIAMA emphasized that comprehensive cognitive rehabilitation is the best option to effectively treat individuals with ABI in a post-acute setting.[78]

Multiple systematic reviews and clinical trials show that comprehensive cognitive rehabilitation is associated with meaningful improvements in both cognitive and functional outcomes.[79] Research demonstrates that rehabilitation programs lead to gains in attention, memory, executive function, and communication, as well as improvements in daily living skills, return to work rates, community participation, and independence in real-world settings.[80] More recent evidence suggests that early, continuous, and coordinated rehabilitation, including cognitive components, reduces healthcare utilization, shortens inpatient rehabilitation stays, and enhances long-term quality of life.[81] Experts at the BIA-MA emphasized the importance of cognitive rehabilitation to manage the burden of ABI on the Massachusetts healthcare system.[82] Moving individuals from acute care to an assisted living facility or nursing home can prevent them from returning to independent living and create a long-term burden on the healthcare system which could have been avoided through cognitive rehabilitation. According to a 2021 report from Brandeis University, cognitive rehabilitation saves approximately $1.28 million to $2.29 million across a lifetime of care for individuals with ABI.[83] Collectively, research indicates that comprehensive cognitive rehabilitation is an effective, evidence-based approach for addressing the complex needs of individuals with ABI.[84,85,86]

Delivery Settings

Post-acute cognitive rehabilitation can be delivered in a variety of settings including inpatient rehabilitation, residential post-acute settings, day treatment programs, outpatient clinics, home/community-based settings, and telehealth/digital care. While delivery settings have different strengths and weaknesses, the ACRM emphasizes that regardless of the setting, care should be individualized and goal-directed to promote functional outcomes. The delivery setting is a vehicle for providing care, but outcomes strongly depend on the intensity, specification, and goal/participation focus of the rehabilitation program.[87] A randomized controlled trial in 2000 found no significant differences between in-hospital and home-based cognitive rehabilitation, with similar outcomes across employment, cognitive, behavioral, and quality of life measures. Despite its age, the study is widely regarded as a seminal contribution.[88] A 2016 study comparing intensive residential rehabilitation, outpatient/community-based rehabilitation, and supported living programs found that both residential and outpatient rehabilitation significantly outperformed supported living programs, when controlling factors such as admission scores, age at injury, days since initial rating etc. These findings support the conclusion that goal-oriented rehabilitation significantly outperforms supported living

care, but the delivery setting does not significantly impact short- or long-term outcomes.[89] An emerging delivery setting for cognitive rehabilitation is telehealth. A 2025 systematic review of cognitive telerehabilitation compared virtual and in-person care settings across 16 studies. The review found there was no significant difference in outcomes between face-to-face rehabilitation and telerehabilitation, but both outperformed standard (non-rehabilitative) care.[90]

Functional Outcomes

CRT success is measured using functional outcomes that reflect program goals. Common assessments include neuropsychological test batteries, such as the Neuropsychological Assessment Battery® which evaluates memory, attention, executive function, and other cognitive domains. Success is also measured by real-world outcomes, including return to work, independence in daily activities, community integration, and quality of life.[91] Other measures of success in cognitive rehab focus on lifestyle outcomes. Outcomes such as return to work (or fitness for duty in military settings), independence in daily activities, community integration, and quality of life are all commonly measured when evaluating cognitive rehabilitation. Experts emphasize that effective rehabilitation should translate cognitive gains into tangible improvements in everyday functioning.[92,93]

CRT is provided as a continuum of care that includes multiple services, making it challenging to evaluate any single service in isolation. The effects of ABI vary widely across individuals, and the complexity of brain function can limit the applicability of standardized assessments in clinical or research settings. Evidence regarding the efficacy of some cognitive rehabilitation services is limited or mixed. Further research may refine or alter these conclusions, particularly for less-studied interventions.

Differences by Age and Recovery Trajectory

CRT benefits the goals of both pediatric and adult populations: adult programs focus on return to work, independent living, and community participation, while pediatric programs emphasize cognitive development and educational reintegration.[94,95] Early, continuous post-acute CRT improves executive function, attention, memory, and independence in moderate to severe TBI.[96,97,98] Evidence for non-traumatic ABI, including stroke, shows variable outcomes with short-term cognitive improvements but less consistent long-term benefit. Relatively few studies provide stratified analyses by age, diagnosis, or developmental stage, limiting conclusions regarding differential effectiveness across the lifespan and recovery phases.[99,100]

2.4 Access and Provider Capacity

In 2010, Massachusetts established a commission (commission) under Section 160 of Chapter 131 to study rehabilitative residential and community-based support for individuals with acquired and traumatic brain injuries (ABI/TBI). The commission evaluated acute and long-term rehabilitation, day programs, respite care, case management, housing, and employment supports. The commission's 2011 report issued recommendations and cost estimates to expand access statewide.[101,102]

Implementation has been limited. Proposed multiservice centers providing inpatient, vocational, and reintegration supports were not funded, and day treatment and structured activity programs remain scarce.[103,104,105] Respite care,

housing, and case management are partially available through ABI and Money Follows the Person (MFP) waivers, but access is restricted.[106,107] Insurance coverage for outpatient CRT is inconsistent, with many commercial plans often not covering these services. [108] Expansion of home- and community-based services, specialized equipment, and assistive technology remains below the $100 million annual estimate from the commission.[109,110]

The 2021 Massachusetts Acquired Brain Injury Report found that 50 – 70% of individuals hospitalized for ABI were discharged with little or no access to rehabilitative services. CRT is not required to be covered in Massachusetts, and inconsistent access to services.. Limited access can result in long-term impairments and higher lifetime healthcare costs.[111]

Provider Capacity

It is difficult to determine the current capacity within the state for CRT services, as CRT encompasses a variety of services and provider types. Measurement of current provider capacity is further complicated by the limited scope of many of the currently available services. Many programs and services are limited to individuals with TBI specifically and not available to all individuals with non-traumatic ABI.[112] Experts from BIA-MA suggest there are sufficient providers in various settings who can meet the current demand for CRT services throughout the state.[113] These experts note that if these services were required to be covered by carriers, providers would be able to assess where the need for these services exists and work to establish programs and services to meet the need.[114]

Increased funding for treatment of ABI could facilitate the establishment of Regionally Based Multiservice Centers, as recommended in the 2021 Massachusetts Acquired Brain Injury Report.[115] These facility types are regarded as an optimal treatment setting for individuals with ABI and could enable more individuals to access multiple areas of care at one location while also reducing the experience of fragmented care. Requiring reimbursement for this type of care could allow currently practicing providers and facilities to invest in development and learning opportunities that would enable them to provide more specialized care for individuals with ABI.[116]

Insights from Other States

States increasingly view CRT as a care continuum rather than site-specific. Policy analyses note that insufficient coverage delays recovery and increases long-term disability.[117,118] Nationally, clinical guideline bodies such as the ACRM and the INCOG emphasize that cognitive rehabilitation should be accessible across inpatient, residential, outpatient, and community-based settings based on clinical need rather than site of service.[119,120] Evaluations of state brain injury programs and Medicaid waiver models similarly suggest that broader access to post-acute and community-based rehabilitation is associated with improved functional outcomes and reduced long-term institutionalization.[121,122]

Table 2 below provides examples of recent state-level legislation and policy actions related to brain injury treatment and services. It highlights measures aimed at improving access to care, mandating coverage for cognitive rehabilitation and related therapies, and establishing infrastructure to support individuals with ABI. These examples illustrate the range of approaches states have taken to address service gaps and support appropriate, timely, and coordinated care for individuals with brain injuries.

Table 2. Recent State Legislation and Policy Actions on Brain Injury Services and Coverage

STATE	RECENT LEGISLATION / ACTION	KEY PROVISIONS
Iowa	H.B. 653	Designates brain injuries as a disability; establishes behavioral health districts; Department of Health and Human Services as state mental health authority
Mississippi	H.B. 959	Eliminates Medicaid waiting periods for individuals with TBI
New Mexico	S.B. 156	Creates Brain Injury Services Fund and Registry; oversees statewide services, research, and direct support
Oklahoma	S.B. on corporal punishment	Prohibits certain corporal punishment in schools for students with select disabilities, including TBI
Tennessee	H.B. 2322	Requires certain health plans to cover ABI treatment (cognitive rehab, neurocognitive therapy, neurobehavioral therapy); prohibits limits on care days
Virginia	H.B. 1064	Requires Department of Medical Assistance Services to provide or seek federal approval for home- and community-based services for TBI or neurocognitive disorders
Texas	Insurance Code §1352	Requires coverage of cognitive rehab, cognitive communication, neurocognitive rehab, neurobehavioral testing/treatment, neurofeedback, and post-acute/community reintegration
Hawaii	S.B. 225	Proposed mandate to cover cognitive rehab in 2017 (not passed at the time of this report)

3.0 Conclusion

ABI, both traumatic and non-traumatic, represents a substantial health care and societal burden in Massachusetts.[123] TBI and non-traumatic causes such as stroke, hypoxic injury, tumors, and infectious disease affect cognitive functioning, daily living, and long-term independence.[124] Cognitive rehabilitation encompasses neuropsychological testing, CRT, functional rehabilitation and remediation, and community reintegration.[125] Evidence indicates that comprehensive, interdisciplinary programs combining these services improve cognitive and functional outcomes, including attention, memory, executive function, communication, independence in daily living, and return to work or school. Neuropsychological testing is essential for accurately identifying cognitive impairments and guiding individualized treatment plans. CRT, including cognitive communication, neurocognitive, neurobehavioral, and neurofeedback therapies, has been shown to increase the likelihood of independent living, employment, and discharge from post-acute care earlier, with robust evidence supporting its effectiveness for moderate to severe TBI and general support for non-traumatic ABI. Functional rehabilitation and community reintegration support the practical application of skills learned in CRT and facilitate safe return to home and community environments. Evidence demonstrates that combining functional practice with CRT produces better outcomes than cognitive interventions alone.[126,127,128,129]

Cognitive rehabilitation is effective across multiple care settings, including inpatient rehabilitation, residential post-acute programs, outpatient clinics, home and community-based care, and telehealth. Research indicates that outcomes depend on intervention intensity, structure, and evidence-based practice rather than the physical setting. Residential and outpatient programs achieve comparable functional outcomes when goal-directed and interdisciplinary, and telehealth has demonstrated similar effectiveness for appropriately selected individuals. Both pediatric and adult populations benefit, though goals differ: adults typically focus on independent living, employment, and community participation, while pediatric programs emphasize cognitive development, educational reintegration, and age-appropriate functional skills.[130,131,132]

Despite clear evidence of effectiveness, access to cognitive rehabilitation in Massachusetts remains limited. Many individuals are discharged from acute care with no or only time-limited access to post-acute rehabilitation.[133] Insurance coverage for CRT is inconsistent, and statewide programs often focus on TBI rather than all forms of ABI. Expanded coverage could enable providers to establish additional programs, improve statewide capacity, and support the development of regionally based multiservice programs that integrate multiple aspects of care.[134,135,136,137]

Several factors affect the interpretation of the evidence of efficacy ofcognitive rehabilitation. Services are typically delivered as comprehensive, interdisciplinary programs, which makes it challenging to isolate the effects of individual components. ABI varies widely in cause, severity, and comorbidities, limiting the generalizability of findings[138]. Populations with non-traumatic ABI are underrepresented in studies relative to populations with TBI. While some foundational studies are older, recent systematic reviews and guideline updates report consistent conclusions, suggesting continued relevance to current care models.[139,140] Overall, the evidence indicates that comprehensive, interdisciplinary cognitive rehabilitation can improve functional outcomes and independence and can be delivered across multiple settings. Expanded insurance coverage and investment in services could support increased access, strengthen provider capacity, and facilitate coordinated, evidence-based care for individuals with ABI.[141,142]

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AN ACT RELATIVE TO COGNITIVE REHABILITATION FOR INDIVIDUALS WITH AN ACQUIRED BRAIN INJURY

ACTUARIAL ASSESSMENT

4.0 Actuarial Assessment

4.1 Background

The bill requires health insurers to provide coverage for medically necessary services related to ABI. Covered services include a broad continuum of cognitive, functional, and rehabilitative care, such as cognitive rehabilitation and communication therapies; neurocognitive and neurobehavioral therapies; diagnostic testing and treatment, including neuropsychological and psychophysiological services; neurofeedback therapy; functional rehabilitation and remediation; community reintegration services; post-acute residential treatment; inpatient care; outpatient and day treatment services; and home- and community-based treatment.

The bill prohibits insurers from denying coverage solely based on service setting or provider type; provided services are delivered by qualified providers participating in approved brain injury rehabilitation programs. It also requires that cost sharing for ABI-related services, including deductibles, copayments, and coinsurance, be no more restrictive than those applied to comparable services in traditional healthcare settings. In addition, the bill prohibits lifetime limits and unreasonable annual limits on the number of covered treatment days or sessions.[1,2]

4.2 Plans Affected by the Proposed Mandate

The bill amends statutes that regulate commercial health care carriers in the Commonwealth. It includes the following sections, each of which addresses statutes dealing with a particular type of health insurance policy when issued or renewed in the Commonwealth:

- Chapter 32A – Plans Operated by the Group Insurance Commission (GIC) for the Benefit of Public Employees
- Chapter 175 – Commercial Health Insurance Companies
- Chapter 176A – Hospital Service Corporations
- Chapter 176B – Medical Service Corporations
- Chapter 176G – Health Maintenance Organizations (HMOs)

Plans Not Affected by the Proposed Benefit Mandate

Self-insured plans (i.e., where the employer or policyholder retains the risk for medical expenses and uses a third-party administrator or insurer to provide only administrative functions), except for those provided by the GIC, are not subject to state-level health insurance mandates. State mandates do not apply to Medicare, Medicare Advantage plans, or other federally funded plans, including TRICARE (covering military personnel and dependents), the Veterans Administration, and the Federal Employees Health Benefit Plan, the benefits for which are determined by, or under the rules set by, the federal government.

The bill would require coverage for a benefit that may be beyond what is within the Division of Insurance (DOI)-designated Essential Health Benefits (EHBs), but further analysis is required. Any state benefit mandate that exceeds the state's definition of EHBs could require the defrayal of the additional cost incurred by enrollees in qualified health plans (QHPs) under federal law.

4.3 Existing Laws Affecting the Cost of the Mandate

Under the ACA, non-legacy individual and small group health plans are required to cover EHBs, which include rehabilitative and habilitative services and devices. This EHB category generally encompasses services intended to help individuals regain, maintain, or improve skills and functioning following an injury or illness. Cognitive rehabilitation services for individuals with ABI might be covered under this category when provided to restore or improve cognitive, communication, or functional impairments. Such services are typically subject to medical necessity criteria and could be delivered through related covered services, including speech therapy, occupational therapy, neuropsychological services, and home health care. However, the ACA does not explicitly identify cognitive rehabilitation as a distinct or standalone covered benefit.[3,4,5]

In Massachusetts, EHB coverage for rehabilitative services includes specific benefit categories and associated quantitative limits that could affect the cost and scope of coverage. Inpatient hospital services provided in rehabilitation hospitals are subject to a 60-day benefit limit per member per calendar year. Outpatient rehabilitation services, including occupational and physical therapy, are subject to a combined limit of 60 visits per year. Rehabilitative speech therapy is covered without a quantitative limit, although certain services may be unlimited only when provided to treat autism spectrum disorders or when delivered as part of covered home health care. Rehabilitative occupational and physical therapy services are subject to the combined 60 visit annual outpatient limit.[6]

These existing federal and state coverage requirements establish a baseline level of rehabilitative service coverage but could limit access to certain post-acute and cognitive rehabilitation services for individuals with ABI. To the extent that the proposed mandate expands covered service types, removes quantitative limits, or broadens coverage settings beyond those currently required under EHB standards, it could result in additional costs to health plans beyond existing legal requirements.

4.4 Current Coverage

BerryDunn surveyed 10 insurance carriers in the Commonwealth, and five responded.[vii] Carrier responses indicated that coverage for ABI-related services is already provided across most markets, though the scope, structure, and applicable controls vary by carrier and plan design. Carriers report covering a range of services that may support cognitive rehabilitation, including CRT, cognitive communication therapy, neurocognitive and neurobehavioral services, neuropsychological testing, speech-language therapy, occupational therapy, physical therapy, functional rehabilitation, remediation, and community reintegration services, when medical necessity criteria are met. In many cases, these services are covered under existing medical necessity guidelines rather than standalone ABI-specific

[vii] BerryDunn surveyed 10 insurance carriers in the Commonwealth (Tufts Health Plan and Harvard Pilgrim Health Care which form Point32Health, are accounted for separately); responses represent five carriers and 81.8% coverage of members.

policies and may be delivered across inpatient, outpatient, home health, and rehabilitation facility settings. Several carriers impose utilization management controls, such as prior authorization for neuropsychological testing, visit limits for outpatient physical and occupational therapy based on plan design, and limits on inpatient rehabilitation or skilled nursing facility days. Coverage in home- and community-based settings is generally available when services are part of a physician-approved treatment plan. Carriers report that cost sharing for ABI-related services is applied consistently with other covered medical services and does not differ specifically based on ABI diagnosis. While some carriers do not anticipate significant changes in utilization given existing coverage, others note that utilization could increase if proposed legislation expands or clarifies requirements related to service settings or removes existing administrative prerequisites.

5.0 Methodology

5.1 Overview

Estimating the impact of this mandate on premiums requires evaluating the cost and utilization of the mandated services relative to current coverage levels. These components were combined, with adjustments for carrier retention, to produce a baseline estimate of the proposed mandate's incremental effect on premiums. This impact was then projected over a five-year period beginning January 1, 2027, as the implementation date should the bill become law.

5.2 Data Sources

The primary data sources used in the analysis are as follows:

- Input from legislative sponsors regarding the intended effect of the bill
- Survey of commercial carriers in the Commonwealth regarding descriptions of current coverage
- Interviews with medical experts
- Massachusetts All Payers Claims Database (APCD) data
- Published scholarly literature, reports, and population data, cited as appropriate

5.3 Steps in the Analysis

1. **Estimated the marginal costs for insurers for cognitive rehabilitation services not currently covered**
   - **A.** Used APCD data to estimate the annual number of individuals with ABI with fully insured commercial coverage.
   - **B.** Analyzed current utilization of cognitive rehabilitation services in APCD data and estimated a range of rates of increased utilization of mandated services under the proposed mandate. Developed low, medium, and high scenario estimates based on APCD data and literature research.
   - **C.** Calculated the range of fully insured commercial service users under the proposed mandate by applying estimated utilization rates from step 1B to the projected number of current fully insured commercial Massachusetts individuals with ABI from step 1A.

D. Developed low, medium, and high scenario estimates of annual cognitive rehabilitation units per user based on claims data in APCD.
E. Estimated the range of the unit cost of cognitive rehabilitation services using claim data from the APCD. Developed low, medium, and high scenario estimates.
F. Calculated annual incremental cost per user by multiplying annual units per user from step 1D by the applicable unit cost from step 1E under each scenario.
G. Calculated the annual incremental medical expense attributable to the mandate by multiplying the estimated number of users per year from step 1C by the average annual cost per user from step 1F under each scenario, and subtracting the baseline observed medical expense.
H. Divided the total dollar impact from step 1G by the total calendar year 2023 membership for all carriers to calculate the marginal cost PMPM associated with the mandate.

2. **Calculated the impact of the projected claim costs on insurance premiums.**

A. Estimated the fully insured Commonwealth population under age 65 for the next five years (2027 – 2031).
B. Projected the incremental PMPM costs for 2027 through 2031 by applying an average annual medical inflation factor.
C. Multiplied the projected PMPM incremental net cost of the mandate from step 2B by the projected population estimate from step 2A to calculate the total estimated marginal claims cost of the bill.
D. Estimated insurer retention (administrative costs, taxes, and profit) and applied the estimate to the final incremental claims cost calculated in step 2C to calculate the effect of the bill on premiums.

5.4 Assumptions and Limitations

The bill includes a broad continuum of services across multiple settings, including inpatient, residential, outpatient, and home- and community-based care. Claims data may not fully distinguish between ABI-specific services and similar services provided for other conditions, particularly when services are delivered under general rehabilitation or behavioral health benefit categories. As a result, baseline utilization and projected incremental use of certain services may be difficult to isolate with precision. Furthermore, provider coding practices may impact the ability to accurately identify cognitive rehabilitation services in claims data. Providers may bill cognitive rehabilitation therapy under other services categories, such as occupational therapy, physical therapy, or speech therapy. As a result, inconsistencies in coding within the APCD might lead to an understatement of the utilization of cognitive rehabilitation services.

Utilization of covered services, including cognitive rehabilitation therapy, cognitive communication therapy, neurocognitive and neurobehavioral therapy, neuropsychological, neurophysiological, and psychophysiological testing and treatment, neurofeedback therapy, functional rehabilitation therapy and remediation, and community reintegration services, varies significantly based on injury severity, clinical presentation, and provider judgment. Accordingly, observed utilization patterns might not be uniform across individuals or providers, and projected utilization increases might differ from actual experience. In addition, although the bill requires coverage for medically necessary ABI-related services, determinations of medical necessity may vary across carriers, providers, and clinical

contexts. Differences in how medical necessity criteria are interpreted or applied following enactment might affect utilization in ways that cannot be fully anticipated in advance.

The bill also limits coverage to services delivered by qualified providers participating in approved brain injury rehabilitation programs. The availability, geographic distribution, and capacity of such providers might vary across the Commonwealth, which could constrain realized utilization in the near term, particularly for specialized or post-acute services.

It is difficult to reliably estimate the administrative costs incurred by carriers to provide training for personnel responsible for prior authorization and utilization review of ABI-related services. These training-related costs are largely administrative in nature, are not directly observable in claims data, and could be embedded within broader operational expenses. In addition, the extent to which such costs affect premiums is uncertain, as premium impacts might be attenuated or delayed by regulatory requirements, including medical loss ratio (MLR) standards and rate review processes. As a result, these administrative costs are not explicitly quantified in this analysis.

If this bill were to pass, it is expected to increase awareness of covered services, which might result in higher utilization of sub-acute services. However, the magnitude and timing of this increase are uncertain. The bill might also facilitate more timely access to appropriate services, which could improve management of ABI-related conditions and potentially reduce downstream medical costs, such as hospital readmissions or ED visits. This analysis does not quantify these potential cost offsets.

In addition, the analysis does not attempt to estimate broader social and economic benefits associated with improved health status, including increased functional independence, reduced disability, improved ability to perform ADLs, and reduced caregiving burden. As a result, estimated incremental costs might not fully reflect the overall societal impact of the bill.

To account for these uncertainties, this analysis employs scenario-based modeling with key assumptions varied within reasonable, judgment-based bounds, resulting in a range of incremental cost estimates.

6.0 Analysis

This section describes the calculations outlined in the previous section in more detail. The analysis includes a best estimate middle-cost scenario, a low-cost scenario, and a high-cost scenario using more conservative assumptions. The analysis section proceeds as follows: Section 6.1 describes the steps used to calculate the incremental cost of the bill. Section 6.2 projects the fully insured population age 0 – 64 in the Commonwealth over the years 2027 – 2031. Section 6.3 calculates the total marginal medical expense. Section 6.4 adjusts these projections for carrier retention to arrive at an estimate of the bill's effect on premiums for fully insured plans.

6.1 Incremental Cost of Mandate

The impact of ABI is highly variable across individuals, reflecting differences in injury characteristics and recovery trajectories. This analysis focuses on individuals discharged from an inpatient hospital stay with an ABI diagnosis. Individuals who had ED visits without associated inpatient admission were excluded, as their conditions were not

perceived to be sufficiently severe to require subsequent cognitive rehabilitation services. Table 3 presents estimates of the number of fully insured members ages 0 – 64 who experienced an inpatient discharge with an ABI diagnosis, based on for 2023 data, which BerryDunn relied on as the base year estimate.

Table 3. Estimates of Commercial Fully Insured Members Ages 0 – 64 with an Inpatient ABI Discharge, 2023

	MEMBER COUNT
TBI	588
Other ABI	3,505
Total ABI	4,093

Next, BerryDunn estimated the mandate's impact on utilization using data from the APCD and a review of the literature. APCD data indicate relatively low utilization of cognitive rehabilitation services compared to physical therapy, occupational therapy, and speech therapy. As carriers indicated they already cover medically necessary cognitive rehabilitation services, and because the mandate is interpreted as making no changes to carriers' ability to establish medical necessity criteria, the overall impact on utilization is expected to be low.

BerryDunn developed low- and mid-cost utilization scenarios based on observed utilization of speech, occupational, and physical therapy services in the APCD. The analysis assumes that, following implementation of the mandate, the proportion of members receiving cognitive rehabilitation services will be comparable to the proportion of members receiving therapy services among those with inpatient stays associated with an ABI. Specifically, in the low-cost scenario, BerryDunn assumes that 3.7% of 2023 fully insured commercial members with an inpatient stay for an ABI will receive cognitive rehabilitation services. This assumption is based on the proportion of speech therapy evaluation claims relative to inpatient ABI stays observed in the APCD. Similarly, because the ratio of 2023 physical therapy users with an ABI diagnosis to the number of 2023 inpatient stays with an ABI diagnosis was 8.2% in the APCD, the mid-cost scenario assumes that 8.2% of fully insured commercial members with an inpatient ABI stay will receive cognitive rehabilitation services after the mandate.

For the high-cost scenario, the analysis allows for the possibility that passage of the mandate increases awareness of cognitive rehabilitation services, resulting in utilization levels that more closely align with epidemiological estimates of need. A 2024 CDC study found that approximately 30% of individuals with TBI experience deteriorated health status.[7] Additionally, long-term cognitive impairment may persist in up to 65% of individuals with TBI.[8] Post-stroke cognitive impairment occurs in up to 60% of stroke survivors within the first year,[9] with 15 – 25% experiencing ongoing cognitive deficits.[10] Based on this evidence, BerryDunn assumes that, after implementation of the mandate, 40% of individuals with a discharge diagnosis of TBI and 20% of individuals with a discharge diagnosis of other types of ABI will receive cognitive rehabilitation services.

Table 4 presents the estimated number of users receiving cognitive rehabilitation services under each utilization scenario following implementation of the mandate.

Table 4. Estimated Number of Cognitive Rehabilitation Services (CRS) Users in Each Scenario

	PERCENTAGE RECEIVING CRS POST MANDATE	NUMBER OF CRS USERS POST MANDATE
Low Scenario	3.7%	150
Mid Scenario	8.2%	335
High Scenario	22.9%	936

Utilization of CRS is expected to vary significantly based on patients' health status and the severity of their ABI. BerryDunn relied on APCD data and analyzed the number of CRS claims per user across carriers. Based on this analysis, BerryDunn developed a range of utilization assumptions of five visits per user in the low scenario, eight visits per user in the mid scenario, and 15 visits per user in the high scenario, shown in Table 5. BerryDunn also observed substantial variation in allowed amounts per CRS claim across carriers. Accordingly, low-, mid-, and high-cost assumptions for the paid amount per claim were developed based on the distribution of CRS claim costs observed in the APCD data.

Table 5. Estimated Annual Visits per User and Paid Amount per Visit for CRS

	ANNUAL VISITS PER USER FOR CRS	PAID AMOUNT PER VISIT
Low Scenario	5	$150
Mid Scenario	8	$200
High Scenario	15	$250

Annual visits per user are multiplied by the paid amount per visit to derive the annual cost per user. The annual cost per user is then multiplied by the estimated number of CRS users to users to determine the total estimated post-mandate cost. The incremental cost represents the difference between this post-mandate total and the 2023 baseline cost. The total dollar impact was divided by the combined commercial membership to calculate the overall PMPM impact of the mandate. There is considerable uncertainty in both the uptake of cognitive rehabilitation services and the volume of services required, which can vary substantially across individuals. As a result, we have assumed a wider-than-typical range to reflect these uncertainties when estimating the total dollar impact.

Table 6. Estimated Incremental Dollar and PMPM Cost of the Mandate for 2023

	INCREMENTAL DOLLAR COST OF MANDATE	INCREMENTAL PMPM COST OF MANDATE
Low Scenario	$83,942	$0.00
Mid Scenario	$507,442	$0.02
High Scenario	$3,482,192	$0.14

BerryDunn trended the PMPM impact from Table 6 from calendar year 2023 to calendar year 2027 and forward using the long-term average national projection for cost increases to physician and clinical services (calculated at 4.5%).[11]

6.2 Project Fully Insured Population in the Commonwealth

Table 7 shows the Commonwealth's fully insured population (ages 0 – 64) projected for the next five years. Appendix A describes the sources of these values.

Table 7. Projected Fully Insured Population in the Commonwealth, Ages 0 – 64

YEAR	2027	2028	2029	2030	2031
Total (0 – 64)	2,126,082	2,118,891	2,112,042	2,105,535	2,097,928

6.3 Total Marginal Medical Expense

The analysis assumes the mandate would be effective for policies issued and renewed on or after January 1, 2027. Based on an assumed renewal distribution by month, market segment, and the Commonwealth market segment composition, 72.1% of the member months exposed in 2027 will have the proposed mandate coverage in effect during calendar year 2027. The annual dollar impact of the mandate in 2027 was estimated using the estimated PMPM and applying it to 72.1% of the member months exposed.

Multiplying the total estimated PMPM cost by the projected fully insured membership over the analysis period results in the total cost (medical expense) associated with the proposed requirement, shown in Table 8.

Table 8. Estimated Marginal Claims Cost

	2027	2028	2029	2030	2031
Low Scenario	$75,249	$108,708	$113,246	$117,992	$122,871
Mid Scenario	$454,889	$657,153	$684,588	$713,275	$742,769
High Scenario	$3,121,558	$4,509,546	$4,697,805	$4,894,667	$5,097,059

6.4 Carrier Retention and Increase in Premium

Assuming an average retention rate of 13.1%—based on CHIA's analysis of administrative costs and profit in the Commonwealth[12]—the increase in medical expenses was adjusted upward to approximate the total impact on premiums. Table 9 displays the result.

Table 9. Estimate of Increase in Carrier Premium

	2027	2028	2029	2030	2031
Low Scenario	$86,556	$125,043	$130,264	$135,722	$141,334
Mid Scenario	$523,245	$755,903	$787,460	$820,458	$854,384
High Scenario	$3,590,630	$5,187,190	$5,403,739	$5,630,182	$5,862,987

7.0 Results

7.1 Five-Year Estimated Impact

For each year in the five-year analysis period, Table 10 displays the projected net impact of the proposed language on medical expenses and premiums using a projection of the Commonwealth's fully insured membership. Note that the relevant provisions are assumed to take effect on January 1, 2027.[viii]

Table 10. Summary Results

	2027	2028	2029	2030	2031	WEIGHTED AVERAGE	FIVE-YEAR TOTAL
Average Members (000s)	2,126	2,119	2,112	2,106	2,098	N/A	N/A
Medical Expense Low ($000s)	$75	$109	$113	$118	$123	$114	$538
Medical Expense Mid ($000s)	$455	$657	$685	$713	$743	$689	$3,253
Medical Expense High ($000s)	$3,122	$4,510	$4,698	$4,895	$5,097	$4,730	$22,321
Additional Premium Low ($000s)	$87	$125	$130	$136	$141	$131	$619
Additional Premium Mid ($000s)	$523	$756	$787	$820	$854	$793	$3,741
Additional Premium High ($000s)	$3,591	$5,187	$5,404	$5,630	$5,863	$5,441	$25,675
PMPM Low	$0.00	$0.00	$0.01	$0.01	$0.01	$0.01	$0.01
PMPM Mid	$0.03	$0.03	$0.03	$0.03	$0.03	$0.03	$0.03
PMPM High	$0.20	$0.20	$0.21	$0.22	$0.23	$0.21	$0.21
Estimated Premium PMPM	$780	$825	$872	$923	$976	$875	$875
Premium % Rise Low	0.001%	0.001%	0.001%	0.001%	0.001%	0.001%	0.001%
Premium % Rise Mid	0.004%	0.004%	0.004%	0.004%	0.003%	0.004%	0.004%
Premium % Rise High	0.025%	0.025%	0.024%	0.024%	0.024%	0.025%	0.025%

7.2 Impact on GIC

The proposed mandate would apply to self-insured plans operating for state and local employees by the GIC. The benefit offerings of GIC plans are similar to most other commercial plans in Massachusetts. This section describes the results for the GIC.

[viii] With an assumed start date of January 1, 2027, dollars were estimated at 72.1% of the annual cost, based upon an assumed renewal distribution by month (Jan – Dec) by market segment and the Massachusetts market segment composition.

Findings from BerryDunn's carrier survey indicate that benefit offerings for GIC and other commercial plans in the Commonwealth are similar. For this reason, the cost of the bill for GIC will likely be similar to the cost for other fully insured plans in the Commonwealth.

BerryDunn assumed the proposed legislative change will apply to self-insured plans that the GIC operates for state and local employees, with an effective date of July 1, 2027. Because of the July effective date, the results in 2027 are approximately one half of an annual value. **Error! Reference source not found.** breaks out the GIC's self-insured membership, as well as the corresponding incremental medical expense.

Table 11. GIC Summary Results

	2027	2028	2029	2030	2031	WEIGHTED AVERAGE	FIVE-YEAR TOTAL
Members (000s)	308	306	305	303	302	N/A	N/A
Medical Expense Low ($000s)	$8	$16	$16	$17	$18	$17	$74
Medical Expense Mid ($000s)	$46	$95	$99	$103	$107	$100	$449
Medical Expense High ($000s)	$313	$652	$678	$705	$735	$686	$3,082

Endnotes

[1] H.B. 1151. An Act relative to cognitive rehabilitation for individuals with an acquired brain injury. **https://malegislature.gov/Bills/194/H1151.**

[2] S.B. 742. An Act relative to cognitive rehabilitation for individuals with an acquired brain injury. **https://malegislature.gov/Bills/194/S742.**

[3] HealthCare.gov. Health benefits & coverage. Preventive health services. **https://www.healthcare.gov/coverage/preventive-care-benefits/.**

[4] HealthCare.gov. Essential Health Benefits. Accessed December 22, 2025. **https://www.healthcare.gov/glossary/essential-health-benefits/.**

[5] Centers for Medicare & Medicaid Services. Information on Essential Health Benefits (EHB) Benchmark Plans. Page Last Modified: 01/14/2025. Accessed December 22, 2025 **https://www.cms.gov/marketplace/resources/data/essential-health-benefits.**

[6] CMS. MASSACHUSETTS EHB BENCHMARK PLAN (2025-2027). Accessed December 22, 2025. **https://www.cms.gov/files/document/ma-bmp-summary-py2025-2027.pdf**

[7] Centers for Disease Control and Prevention. Traumatic Brain Injury & Concussion. About Moderate and Severe TBI. May 16, 2024. Accessed January 9, 2026. **https://www.cdc.gov/traumatic-brain-injury/about/moderate-severe-tbi.html#:~:text=Five%2Dyear%20outcomes%20of%20persons,TBI%20Model%20Systems%20National%20Database.**

[8] Rabinowitz AR, Levin HS. Cognitive sequelae of traumatic brain injury. Psychiatr Clin North Am. March 2014 ;37(1):1-11. **https://doi: 10.1016/j.psc.2013.11.004.**

[9] American Heart Association Stroke Council; Council on Cardiovascular and Stroke Nursing; Council on Cardiovascular Radiology and Intervention; Council on Hypertension; and Council on Lifestyle and Cardiometabolic Health. Cognitive Impairment After Ischemic and Hemorrhagic Stroke: A Scientific Statement From the American Heart Association/American Stroke Association. Stroke. 2023 Jun;54(6):e272-e291. **https://doi: 10.1161/STR.0000000000000430.**

[10] Kelly-Hayes M, et al. The American Heart Association Stroke Outcome Classification. Stroke. 1998 Jun;29(6):1274-80. **https;//doi: 10.1161/01.**

[11] U.S. Centers for Medicare & Medicaid Services, Office of the Actuary. National Health Expenditure Projections. “Table 8, Physician and Clinical Services Expenditures; Levels, Percent Change, and Percent Distribution, ; Private Insurance.” Accessed April 25, 2025. **https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NationalHealthAccountsProjected.html.**

[12] Massachusetts Center for Health Information and Analysis. Annual Report on the Massachusetts Health Care System, March 2025. Accessed April 25, 2025. **https://www.chiamass.gov/annual-report.**

Appendix A: Membership Affected by the Proposed Language

Membership potentially affected by the proposed mandated change includes Commonwealth residents with fully insured, employer-sponsored health insurance (ESI) issued by a Commonwealth-licensed company (including through the GIC); nonresidents with fully insured, ESI issued in the Commonwealth; Commonwealth residents with individual (direct) health insurance coverage; and lives covered by GIC self-insured coverage. Other populations within the self-insured commercial sector are excluded from the state coverage mandate due to federal Employee Retirement Income Security Act (ERISA) protections of self-insured plans. The membership projections are used to determine the total dollar impact of the proposed mandate in question; however, variations in the membership forecast will not affect the general magnitude of the dollar estimates. To assess how recent volatility in commercial enrollment levels might affect these cost estimates, please note that the PMPM and percentage of premium estimates are unaffected because they are per-person estimates, and the total dollar estimates will vary by the same percentage as any percentage change in enrollment levels.

CHIA-reported enrollment data formed the basis for membership projections. CHIA publishes a biannual enrollment trends report and supporting databook (enrollment-trends-Data Through March 2025 databook[1]), which provide enrollment data for Commonwealth residents by insurance carrier for most carriers, excluding some small carriers. CHIA uses supplemental information beyond the data in the APCD to develop its enrollment trends report and adjust the resident totals from the APCD. For the base year 2020 in the membership projection, the 2020 APCD and published 2020 membership reports available from the Massachusetts Division of Insurance (DOI) [2,3] were used to develop a factor to adjust the CHIA enrollment data for the few small carriers not present in the enrollment report. The adjustment was trended forward to 2025 and applied to CHIA enrollment data.

In 2021, commercial, fully insured membership was 5.6% less than in 2019, with a shift to both uninsured and MassHealth coverage. As part of the public health emergency (PHE), members were not disenrolled from MassHealth coverage even when they no longer passed eligibility criteria. Shortly before the PHE ended, redetermination efforts began in April 2023 and were anticipated to occur over a 12-month period. Many of the individuals subject to redetermination will no longer be eligible for MassHealth coverage. It is anticipated that a portion of individuals losing coverage will be eligible for coverage in individual ACA plans and ESI. MassHealth's monthly caseload reports[4] indicated that coverage redeterminations were largely completed by June 2024. The Massachusetts Health Connector's monthly reports[5] showed that membership growth stabilized through December 2024, likely due to disenrolled MassHealth members enrolling in individual plans. CHIA's quarterly enrollment trends report[6] showed stable total membership in private commercial group insurance, with a shift from fully insured to self-insured plans. Based on this information, BerryDunn estimated the final 2024 membership impacted by the proposed mandate.

The distribution of members by age and gender was estimated using APCD population distribution ratios and was checked for reasonableness and validated against U.S. Census Bureau data.[7] Membership was projected from 2025 – 2050, with growth rate estimates by age and gender derived from a Massachusetts population projection from UMass Donahue Institute.[8]

Projections for the GIC self-insured lives were developed using the GIC base data for 2018, 2019, and 2025, which BerryDunn received directly from the GIC, as well as the same projected growth rates from the Census Bureau used for the Commonwealth population. BerryDunn accounted for municipalities that are expected to join GIC effective July 2026. This information was incorporated into the GIC membership projection. Breakdowns of the GIC self-insured lives by gender and age were based on U.S. Census Bureau distributions.

Endnotes

[1] Center for Health Information and Analysis. Estimates of fully insured and self-insured membership by insurance carrier. Accessed January 9, 2026. **https://www.chiamass.gov/enrollment-in-health-insurance.**

[2] Massachusetts Department of Insurance. HMO Group Membership and HMO Individual Membership. Accessed March 27, 2025. **https://www.mass.gov/info-details/hmo-membership-reports.**

[3] Massachusetts Department of Insurance. Membership in Insured Preferred Provider Plans. Accessed March 27, 2025. **https://www.mass.gov/info-details/insured-preferred-provider-membership.**

[4] MassHealth Enrollment and Caseload Metrics Accessed March 27, 2025 **https://www.mass.gov/lists/masshealth-enrollment-and-caseload-metrics#2025-masshealth-monthly-caseload-reports-.**

[5] Massachusetts Health Connector. Membership During MassHealth Redeterminations. Accessed March 27, 2025. **https://betterhealthconnector.com/wp-content/uploads/Health-Connector-MassHealth-Renewals-Dashboard-12-17-24.pdf.**

[6] *Op. cit.* Center for Health Information and Analysis. Estimates of fully insured and self-insured membership by insurance carrier.

[7] National Population by Characteristics: 2020-2024. Accessed March 27, 2025 **https://www.census.gov/data/tables/time-series/demo/popest/2020s-national-detail.html.**

[8] Massachusetts Population Projections. Accessed March 27, 2025. **https://donahue.umass.edu/business-groups/economic-public-policy-research/massachusetts-population-estimates-program/population-projections.**