
MANDATED BENEFIT REVIEW OF SENATE BILL 540
SUBMITTED TO THE 191ST GENERAL COURT:

**AN ACT PROVIDING
HEARING AIDS FOR PERSONS
WITH SENSORY IMPAIREDNESS**

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Prepared for Massachusetts Center for Health information and Analysis
by Berry Dunn McNeil & Parker, LLC



Mandated Benefit Review of Senate Bill 540

Submitted to the 191st General Court:

An Act Providing Hearing Aids for Persons with Sensory Impairedness

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1.0 Benefit Mandate Overview: Senate Bill (S.B.) 540: An Act Providing Hearing Aids for Persons with Sensory Impairedness

1.1 History of the Bill

The Committee on Financial Services referred Senate Bill (S.B.) 540, “An Act providing hearing aids for persons with sensory impairedness,”ⁱ to the Center for Health Information and Analysis (CHIA) for review. Massachusetts General Laws (MGL), Chapter 3, Section 38C, requires CHIA to review and evaluate the potential fiscal impact of each mandated benefit bill referred to the agency by a legislative committee. The report is required to include a review of the medical efficacy of the treatment or service as well as its effects on the cost of healthcare, including the premium and administrative expenses, should the bill become law.

This report is not intended to determine whether S.B. 540 would constitute a health insurance benefit mandate for purposes of Commonwealth defrayal under the Affordable Care Act (ACA), nor is it intended to assist with Commonwealth defrayal calculations if it is determined to be a health insurance benefit mandate requiring Commonwealth defrayal.

1.2 What Does the Bill Propose?

Massachusetts S.B. 540, as submitted in the 191st General Court of the Commonwealth of Massachusetts (Commonwealth), requires coverage for the cost of one hearing aid per hearing-impaired ear per hearing-impaired person or other person with additional sensory disabilities such as severe vision loss or blindness.ⁱ The cost shall be covered up to \$500 and 80 percent coverage of the next \$1,500 for each hearing aid,ⁱⁱ every 24 months upon a written statement from the treating physician that the hearing aids are necessary regardless of etiology.

Coverage shall also include all related services prescribed by a licensed audiologistⁱⁱⁱ or hearing instrument specialist,^{iv} as well as the initial hearing aid evaluation, fitting and adjustments, and supplies, including ear molds. As set forth in the bill, the insured may choose a higher priced hearing aid and pay the difference in cost above the coverage limit set forth above without any financial or contractual penalty to the insured or to the provider of the hearing aid. Further, the benefits set forth in this bill “shall not be subject to any greater deductible, coinsurance, copayments, or out-of-pocket limits than any other benefits provided by the insurer.” As a result, a member would always pay the lesser of the cost-share set forth in the bill or the cost-share due to their insurance benefit structure.

Subsequent to referral of the bill to CHIA for review, CHIA and its consultants confirmed the following assumptions regarding the S.B. 540’s intent:

ⁱ While all the license types do not include the language “or other person with additional sensory disabilities such as severe vision loss or blindness,” this phrase is assumed to be applicable to all license types provided for in the bill.

ⁱⁱ Pursuant to MGL c.112§196, a hearing aid shall have the following meaning: a wearable aid or device, not including surgical implants, which is inserted directly into the ear or worn with an ear mold and air conduction receiver or bone oscillator attachment and any part, attachment or accessory but excluding batteries, cords and accessories thereto, designed for or offered for the purpose of aiding or compensating for hearing loss.

ⁱⁱⁱ Pursuant to MGL c.112§196, an audiologist shall mean: a person licensed as an audiologist in the Commonwealth.

^{iv} Pursuant to MGL c.112§196, a hearing instrument specialist shall mean: a person licensed as a hearing instrument specialist in the Commonwealth.

1. The bill requires members to pay the lesser of the cost-share in the bill or the cost-share due to the insurance benefit structure.
2. Because there is already a state mandated hearing aid benefit for individuals 21 years and younger,^v the proposed mandate is intended to require coverage for individuals over the age of 21.

Consequently, this report will focus solely on a review of the efficacy of requiring coverage for a hearing-impaired person or other person with additional sensory disabilities over the age of 21.

1.3 Medical Efficacy of S.B. 540

Hearing loss can occur in a variety of ways and at any time during life when any part of the ear (including the inner, middle, or outer ear), the acoustic nerve, or the auditory system is not functioning properly.² Approximately one in three people in the United States (U.S.) between the ages of 65 and 74 has hearing loss, and nearly half of those older than 75 have difficulty hearing.³ Older persons with vision impairment are also more likely to have hearing loss.⁴ For people 12 years of age and older, one in eight has hearing loss in both ears based on the results of standard hearing examinations in the U.S.⁵ Further, using data from a recent National Health and Nutrition Examination Survey (NHANES), 14.1% of adults aged 20 – 69 years had either unilateral or bilateral hearing impairment.⁶

Age-related hearing loss most often occurs in both ears, affecting them equally. Because the loss is gradual, individuals may not recognize their hearing deficits.⁷ Problems with hearing and communicating are often frustrating to affected individuals as well others in their environment.⁸ Our senses also work collectively to enhance perception.⁹ As a result, individuals who are early blind or deaf often experience profound changes in the way they use their remaining senses.¹⁰ Blind people rely strongly on auditory information to orient them in their environment.¹¹

1.4 Current Coverage

BerryDunn surveyed 10 insurance carriers in the Commonwealth, and 7 responded. In general, hearing aids are not currently covered for adults. However, three of the respondent carriers indicated that some fully insured large groups add a rider that includes coverage for hearing aids for adults. One carrier indicated that hearing aids are covered up to \$2,500 per hearing-impaired ear every 3 years.

1.5 Cost of Implementing the Bill

Requiring coverage for this benefit by fully insured health plans would result in an average annual increase, over five years, to the typical member's monthly health insurance premium of between \$0.86 and \$2.24 per member per month (PMPM) or between 0.14% and 0.36% of premium. The impact on premiums is driven by the provisions of S.B. 540 that require carriers to cover hearing aids for one hearing aid per hearing-impaired ear per hearing-impaired adult.

^v M.G.L. c.175 §47X, c.176A §8Y, c.176B §4EE, c.176G §4N, c.32A §23.

Coverage includes all related services including the initial hearing aid evaluation, fitting and adjustments, and supplies, including ear molds. The incremental cost of hearing aids is estimated using claims data from the Massachusetts All Payer Claims Database (APCD) to determine cost per service or “unit cost” for these services. The number of adults anticipated to receive a hearing aid is estimated using population data and academic literature. The provision including members with additional sensory disabilities, such as severe vision loss or blindness, did not add materially to the cost of the mandate. A literature review, coupled with insights from an expert, suggests that such individuals do not have a different hearing threshold to require hearing aids.

1.6 Plans Affected by the Proposed Benefit Mandate

S.B. 540 applies to commercial fully insured health insurance plans, hospital service corporations, medical service corporations, Health Maintenance Organizations (HMOs), and to both fully and self-insured plans operated by the Group Insurance Commission (GIC) for the benefit of public employees. The proposed mandate as drafted affects Medicaid/MassHealth; however, CHIA’s analysis does not estimate the potential effect of the mandate on Medicaid expenditures.

1.7 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 and 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 rules set by the federal government.

2.0 Medical Efficacy Assessment

S.B. 540, as submitted to the 191st General Court, would require coverage for the cost of one hearing aid^{vi} per hearing-impaired ear per hearing-impaired person or other person with additional sensory disabilities such as severe vision loss or blindness.¹²

MGL 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 mandated treatment or service. They also 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:

- 2.0 Medical Efficacy
- Section 2.1 describes how hearing loss is categorized and methods of diagnosis
- Section 2.2 summarizes the prevalence of hearing loss
- Section 2.3 defines other types sensory impairedness
- Section 2.4 describes the various hearing aids available
- Section 2.5 describes the effectiveness of hearing aid use

2.1 Types of Hearing Loss

Hearing loss that occurs gradually as individuals age is common in approximately one in three people in the United States (U.S.) between the ages of 65 and 75.¹³ Hearing depends on a series of events that change sound waves in the air into electrical signals that the auditory nerve then carries to the brain through a complex series of steps.¹⁴ As sound waves pass through the outer ear and cause vibrations at the eardrum, these vibrations then pass through the fluid in the inner ear (cochlea).¹⁵ The cochlea has nerve cells with thousands of tiny hairs that help translate these electrical signals to the brain.¹⁶ Hearing loss is categorized in a variety of ways, including:¹⁷

- Type:
 - Conductive: Something stops sound from reaching the outer or middle ear
 - Sensorineural: Caused by inner ear or nerve problems
 - Mixed: Caused by both conductive and sensorineural issues
 - Auditory neuropathy spectrum disorder: Damage to the inner ear or nerve disrupts the brain's ability to organize sound

^{vi} Pursuant to MGL c.112§196, a hearing aid has the following meaning under the bill, “a wearable aid or device, not including surgical implants, which is inserted directly into the ear or worn with an ear mold and air conduction receiver or bone oscillator attachment and any part, attachment or accessory but excluding batteries, cords and accessories thereto, designed for or offered for the purpose of aiding or compensating for hearing loss.”

- Degree:
 - Mild: Might hear some speech; soft sounds are difficult to hear
 - Moderate: Hears almost no speech at normal level
 - Severe: Hears no speech at normal level; only some loud sounds are heard
 - Profound: Hears no speech and only very loud sounds

- Unilateral or bilateral: One or both ears
- Pre-lingual or post-lingual: Before or after person learned to speak
- Symmetrical or asymmetrical: Same in both ears or different for each ear
- Progressive or sudden: Hearing worsens over time or occurs quickly
- Fluctuating or stable: Hearing gets better or worse over time or remains the same
- Congenital or acquired/delayed onset: Hearing loss present at birth or appears sometime later in life

Symptoms of hearing loss might include muffling of speech and other sounds; difficulty understanding words, especially when there is background noise or in a crowded setting; trouble hearing consonants; frequently asking questions; withdrawal from conversations; and avoidance of some social settings.¹⁸ Hearing loss can be caused by:¹⁹

- damage to the inner ear that results from aging and exposure to loud noises
- gradual buildup of earwax
- an ear infection and abnormal growths or tumors
- a ruptured eardrum

Age-related hearing loss most often occurs in both ears, affecting them equally.²⁰ In addition to aging, other risk factors that might damage or lead to the loss of hairs and nerve cells in the inner ear include:²¹

- long-term exposure to loud sounds; heredity; occupational noises such as those found in farming, construction, and factory work
- recreational noises associated with exposure to high noise levels in activities including snowmobiling and listening to loud music
- some medications
- certain illnesses that result in high fever

There are numerous tests to diagnose hearing loss. During a physical exam, a physician can also examine the patient's ear for possible structural causes for the hearing loss, such as earwax or inflammation from infection.²²

2.2 Prevalence

Deafness or significant trouble hearing increases dramatically with age, rising from 0.9% among adults under the age of 46 to 11.1% adults aged 65 or older.²³ Overall, hearing loss directly affects 23% of Americans aged 12 years or older with the majority of those impacted experiencing mild hearing loss.²⁴ Roughly 2% of adults aged 45 – 54 have disabling hearing loss, with the rate increasing to 8.5% among adults aged 55 – 64.²⁵ Prevalence is greater among adults aged 20 – 69 who have reported five or more years of exposure to loud noise at work (18% exposed versus 5% not exposed).²⁶ Given the U.S.'s aging population, it is projected that the number of individuals in the U.S. over the age of 65 will double by 2030 to 72.1 million.²⁷ The overall prevalence of hearing loss is thus expected to rise.

2.3 What is a Hearing Aid?

A hearing aid is a small electronic device—comprised of a microphone, amplifier, and speaker—that is available behind-the-ear, in-the-ear-canal, or in-the-ear varieties, see Appendix A.²⁸ A hearing aid is primarily useful for improving hearing and speech comprehension in an individual who experiences hearing loss resulting from damage to the small sensory cells in the inner ear, called hair cells.²⁹ With a hearing aid, sound is received through the microphone, converted to electronic signals, sent to the amplifier that manipulates the power of the signals, and then to the ear through the speaker.³⁰ Hearing aids are designed to amplify sounds and might be worn by people of any age, including infants.³¹ Hearing aids work differently depending on the electronics used with the two main types being analog and digital.³² Analog aids convert sound waves into electrical signals, while digital aids convert the sound waves into numerical codes before amplifying them.³³

In addition to hearing aids that increase sound volume, middle-ear implants and bone-anchored hearing aids are also available but must be surgically implanted. These work differently than other types of hearing aids, helping instead to increase sound vibration transmission to the inner ear.³⁴ However, these types of surgically implanted hearing aids do not fall within the bill's definition of a "hearing aid." As such, they are not included in the efficacy review or in the cost analysis.

Determining the most effective hearing aid for each patient depends on the kind and severity of hearing loss, as well as whether the hearing loss is in both ears.³⁵ In addition to accurately identifying the characteristics of hearing loss, applying the appropriate adjustment to the hearing aid's output performance and verifying the fitting with real-ear measurements are important to help ensure a patient's satisfaction and overall acceptance of hearing aids.³⁶

2.4 Other Types of Sensory Impairedness

Beyond hearing loss, other types of sensory impairedness exist. Sensory impairment is when any one of the five senses (sight, hearing, touch, smell, and taste), as well as spatial awareness, no longer functions normally.^{37,38} The sensory systems are extremely sensitive, each performing multiple functions and interacting in a complementary way by providing a high degree of redundancy that is particularly helpful should one or more sensory systems be impaired.³⁹ Blind people rely strongly on auditory information to orient them in their environment, and several human studies show that blind persons perform nonvisual tasks better than those with sight.^{40,41} However, one study found that in the presence of background noise, older adults with severe low vision but normal hearing had more difficulty with word and phrase identification than those with normal vision; recommending strategies for optimizing face-to-

face communication in settings with background noise.⁴² A review of the literature did not reveal any studies on the efficacy of hearing aids for patients with other sensory impairments.

2.5 Effectiveness of Hearing Aid Use

Irrespective of how it occurs, hearing loss has been linked to feelings of depression, anxiety, frustration, social isolation, and fatigue.⁴³ Research has firmly established that hearing loss is associated with poor quality of life among older individuals and may even lead to poor general health as well as an increased mortality risk.⁴⁴ A review of three clinical studies found evidence that hearing aids have a large beneficial effect by improving the ability of adults with mild to moderate hearing loss to take part in everyday situations and a small beneficial effect in improving general health-related quality of life.⁴⁵ In addition, hearing aids are known to be useful in improving hearing and speech comprehension and are considered by some clinicians to be the most effective treatment for persons with hearing impairment.^{46,47}

Although hearing loss can have potentially debilitating effects and hearing aid use has known benefits, only 16% of adults aged 20 – 69 who could be benefit from wearing hearing aids have ever used a hearing aid.⁴⁸ A scoping study^{vii} of health research evidence found several potential reasons for non-use of hearing aids including: hearing aid value; fit, comfort, and maintenance of the hearing aid; attitude; device factors/performance; cost; psycho-social/situational factors; ear problems; and appearance.^{49,50} Hearing aids are one of the key components to improving hearing and communication abilities.⁵¹ A Healthy People 2020^{viii} goal calls for increasing the proportion of individuals aged 20 – 69 years who have ever used a hearing aid by 10%.^{52,53} Improving the provision of hearing health care for adults in the U.S. is an urgent public health problem, and for many people with uncorrected hearing loss, hearing aids could significantly improve their quality of life.⁵⁴

^{vii} A “scoping study” is a review of a wide range of literature to identify where gaps or innovative approaches may lie. It tends to address broader topics rather than one well-defined research question.

^{viii} Healthy People is a set of goals and objective with 10-year targets designed to guide national health promotion and disease prevention and are released by the U.S. Department of Health and Human Services each decade.

Appendix A

Styles of hearing aids⁵⁵



Endnotes

- ¹ The 191st General Court of the Commonwealth of Massachusetts, Senate Bill 540, “An Act providing hearing aids for persons with sensory impairedness.” Accessed 15 September 2020: <https://malegislature.gov/Bills/191/S540>.
- ² U.S. Centers for Disease Control and Prevention (CDC), National Center on Birth Defects and Developmental Disabilities. What is Hearing Loss in Children? Updated 21 March 2019; accessed 28 January 2020: <http://www.cdc.gov/ncbddd/hearingloss/facts.html>.
- ³ U.S. Department of Health and Human Services, National Institutes of Health (NIH), National Institute on Deafness and Other Communication Disorders (NIDCD). Age-Related Hearing Loss. Last updated 17 July 2018. Accessed 12 October 2020: <https://www.nidcd.nih.gov/health/age-related-hearing-loss>.
- ⁴ Chia E, Mitchell P, Rochtchina E, Foran S, Golding M, Wang JJ. Association Between Vision and Hearing Impairments and Their Combined Effects on Quality of Life. *Arch Ophthalmol*. 2006;124(10):1465–1470. Accessed 12 October 2020: <https://jamanetwork.com/journals/jamaophthalmology/fullarticle/418658>.
- ⁵ NIDCD. Quick Statistics About Hearing. Last updated 15 December 2016. Accessed 14 October 2020: <https://www.nidcd.nih.gov/health/statistics/quick-statistics-hearing>.
- ⁶ Hoffman HJ, Dobie RA, Losonczy KG, Themann CL, Flamme GA. Declining Prevalence of Hearing Loss in US Adults Aged 20 to 69 Years. *JAMA Otolaryngol Head Neck Surg*. 2017;143(3):274–285. Accessed 14 October 2020: <https://jamanetwork.com/journals/jamaotolaryngology/fullarticle/2592954>.
- ⁷ Op. cit. Age-Related Hearing Loss.
- ⁸ McCormack A, Fortnum H. Why do people fitted with hearing aids not wear them? *Int J Audiol*. 2013 May;52(5):360-8. Accessed 8 October 2020: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3665209/>.
- ⁹ Andrew J. King, Ph.D, What happens to your hearing if you are born blind? *Brain*, Volume 137, Issue 1, January 2014, Pages 6–8. <https://academic.oup.com/brain/article/137/1/6/365182>.
- ¹⁰ Op. cit. Andrew J. King, Ph.D, What happens to your hearing if you are born blind?
- ¹¹ Monica Gori, Giulio Sandini, Cristina Martinoli, David C. Burr, Impairment of auditory spatial localization in congenitally blind human subjects, *Brain*, Volume 137, Issue 1, January 2014, Pages 288–293. Accessed 15 September 2020: <https://academic.oup.com/brain/article/137/1/288/361673>.
- ¹² Op. cit. The 191st General Court of the Commonwealth of Massachusetts, Senate Bill 540.
- ¹³ Mayo Clinic. Hearing Loss. Overview. Accessed 5 October 2020: <https://www.mayoclinic.org/diseases-conditions/hearing-loss/symptoms-causes/syc-20373072>.
- ¹⁴ Op. cit. NICHHD. Age-Related Hearing Loss.
- ¹⁵ Op. cit. Mayo Clinic. Hearing Loss. Overview.
- ¹⁶ Op. cit. Mayo Clinic. Hearing Loss. Overview.
- ¹⁷ CDC: Hearing Loss in Children: Types of Hearing Loss. Last reviewed 8 June 2020. Accessed 12 October 2020: <http://www.cdc.gov/ncbddd/hearingloss/types.html>.
- ¹⁸ Op. cit. Mayo Clinic. Hearing Loss. Overview.
- ¹⁹ Op. cit. Mayo Clinic. Hearing Loss. Overview.

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- ²⁰ Op. cit. NICHD. Age-Related Hearing Loss.
- ²¹ Op. cit. Mayo Clinic. Hearing Loss. Overview.
- ²² Mayo Clinic. Hearing Loss. Diagnosis. Accessed 5 October 2020: <https://www.mayoclinic.org/diseases-conditions/hearing-loss/diagnosis-treatment/drc-20373077>.
- ²³ CDC. National Center for Health Statistics. Health Disparities Among Adults With Hearing Loss: United States, 2000-2006. Last reviewed 6 November 2015. Accessed 12 October 2020: <https://www.cdc.gov/nchs/data/hestat/hearing00-06/hearing00-06.htm>.
- ²⁴ Goman AM, Lin FL. Prevalence of Hearing Loss by Severity in the United States. American Journal of Public Health. 2016, 106:1820-1822. Accessed 12 October 2020: <https://ajph.aphapublications.org/doi/abs/10.2105/AJPH.2016.303299>.
- ²⁵ NIDCD. Quick Statistics About Hearing.
- ²⁶ NIDCD. Quick Statistics About Hearing.
- ²⁷ Oyler AL. American Speech-Language-Hearing Association. Untreated Hearing Loss in Adults-A Growing National Epidemic. January 2012. Accessed 8 October 2020: <https://www.asha.org/Articles/Untreated-Hearing-Loss-in-Adults/>.
- ²⁸ NIDCD. Hearing Aids. NIH Pub. No. 13-4340; Last Updated 6 March 2017. Accessed 16 September 2020: <https://www.nidcd.nih.gov/health/hearing-aids>.
- ²⁹ Op. cit. NICHD. Hearing Aids.
- ³⁰ Op. cit. NIDCD: Hearing Aids.
- ³¹ Op. cit. CDC: Hearing Loss in Children: Treatment and Intervention Services.
- ³² Op. cit. NIDCD: Hearing Aids.
- ³³ Op. cit. NIDCD: Hearing Aids.
- ³⁴ Op. cit. NIDCD: Hearing Aids.
- ³⁵ Op. cit. NIDCD: Hearing Aids.
- ³⁶ Northern JL. Strategies of Adult Hearing Aid Selection. Audiol Res. 2011 Mar 23;1(1):e20. Accessed 8 October 2020: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4627145/>.
- ³⁷ Reading Borough Council. What is Sensory Impairment. reading.gov.uk. Updated July 2020. Accessed 7 October 2020: https://servicesguide.reading.gov.uk/kb5/reading/directory/advice.page?id=yjdblht_x0#:~:text=Sensory%20impairment%20is%20when%20one,you%20have%20a%20hearing%20impairment.
- ³⁸ Virginia Department of Education. Sebsory Disabilities. Accessed 7 October 2020: http://www.doe.virginia.gov/special_ed/disabilities/sensory_disabilities/.
- ³⁹ Simon HJ, Levitt H. Effect of dual sensory loss on auditory localization: implications for intervention. Trends Amplif. 2007 Dec;11(4):259-72. Accessed 11 September 2020: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4111533/>.
- ⁴⁰ Loss of Sight and Enhanced Hearing: A Neural Picture. PLoS Biol. 2005 Feb;3(2):e48. Accessed 12 October 2020: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC544930/>.
- ⁴¹ Op. cit. Loss of Sight and Enhanced Hearing: A Neural Picture.

- ⁴² Osborn RR, Erber NP, Galletti AB. Effects of Background Noise on the Perception of Speech by Sighted Older Adults and Older Adults with Severe Low Vision. October 2000. *Journal of visual impairment & blindness* 94(10):648-653. Accessed 12 October 2020: https://www.researchgate.net/publication/266389246_Effects_of_background_noise_on_the_perception_of_speech_by_sighted_older_adults_and_older_adults_with_severe_low_vision.
- ⁴³ Oyler AL. American Speech-Language-Hearing Association. Untreated Hearing Loss in Adults-A Growing National Epidemic. January 2012. Accessed 8 October 2020: <https://www.asha.org/Articles/Untreated-Hearing-Loss-in-Adults/>.
- ⁴⁴ Op. cit. McCormack A, Fortnum H. Why do people fitted with hearing aids not wear them?
- ⁴⁵ Ferguson MA, Kitterick PT, Chong L, Edmondson-Jones M, Barker F, Hoare DJ. Hearing aids for mild to moderate hearing loss in adults. *Cochrane Database of Systematic Reviews* 2017, Issue 9. Art. No.: CD012023. Accessed 16 September 2020: https://www.cochrane.org/CD012023/ENT_hearing-aids-mild-moderate-hearing-loss-adults#:~:text=The%20duration%20of%20the%20studies%20was%20between%20six%20weeks%20and%20six%20months.&text=We%20found%20evidence%20in%20three,take%20part%20in%20everyday%20situations.
- ⁴⁶ Op. cit. NICHD. Hearing Aids.
- ⁴⁷ Op. cit. Northern JL. Strategies of Adult Hearing Aid Selection.
- ⁴⁸ Op. cit. NIDCD. Quick Statistics About Hearing. Quick stats about hearing loss.
- ⁴⁹ Op. cit. McCormack A, Fortnum H. Why do people fitted with hearing aids not wear them?
- ⁵⁰ Committee on Accessible and Affordable Hearing Health Care for Adults; Board on Health Sciences Policy; Health and Medicine Division; National Academies of Sciences, Engineering, and Medicine; Blazer DG, Domnitz S, Liverman CT, editors. *Hearing Health Care for Adults: Priorities for Improving Access and Affordability*. Washington (DC): National Academies Press (US); 2016 Sep 6. 4, Hearing Technologies: Expanding Options. Accessed 8 October 2020: <https://www.ncbi.nlm.nih.gov/books/NBK385313/>.
- ⁵¹ Oyler AL. American Speech-Language-Hearing Association. Untreated Hearing Loss in Adults-A Growing National Epidemic. Accessed 12 October 2020: <https://www.asha.org/Articles/Untreated-Hearing-Loss-in-Adults/>.
- ⁵² Committee on Accessible and Affordable Hearing Health Care for Adults; Board on Health Sciences Policy; Health and Medicine Division; National Academies of Sciences, Engineering, and Medicine; Blazer DG, Domnitz S, Liverman CT, editors. *Hearing Health Care for Adults: Priorities for Improving Access and Affordability*. Washington (DC): National Academies Press (US); 2016 Sep 6. 3, Hearing Health Care Services: Improving Access and Quality. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK385310/><https://www.ncbi.nlm.nih.gov/books/NBK385310/>.
- ⁵³ Hearing. ENT-VSL-3.1. Increase the proportion of adults aged 20 to 69 years with hearing loss who have ever used a hearing aid. Accessed 8 October 2020: <https://www.healthypeople.gov/2020/topics-objectives/topic/hearing-and-other-sensory-or-communication-disorders/objectives>.
- ⁵⁴ NIDCD. Accessible and Affordable Hearing Health Care Activities. Last updated 21 February 2020. Accessed 12 October 2020: <https://www.nidcd.nih.gov/research/improve-hearing-health-care>.
- ⁵⁵ Op. cit. NICHD. Hearing Aids.

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COST REPORT

This report was prepared by Larry Hart; Amanda Henson, MBA; Valerie Hamilton, RN, MHA, JD; Matt Kukla, PhD; Andrea Clark, MS; and Jennifer Elwood, FSA, MAAA, FCA.

1.0 Executive Summary

Massachusetts Senate Bill (S.B.) 540, as submitted in the 191st General Court of the Commonwealth of Massachusetts (Commonwealth), requires fully insured plans to cover the cost of hearing aids, including one per hearing-impaired ear per hearing-impaired person or other person with additional sensory disabilities, such as severe vision loss or blindness. The cost is required to be covered up to \$500 and 80% coverage of the next \$1,500 for each hearing aid,ⁱ every 24 months, upon a written statement from the treating physician that the hearing aids are necessary regardless of etiology.

After referral of S.B. 540 to the Massachusetts Center for Health Information and Analysis (CHIA) for review, CHIA and its consultants confirmed the following assumptions regarding the bill's intent:

1. The bill requires members to pay the lesser of the cost-share in the bill or the cost-share due to the insurance benefit structure.ⁱⁱ
2. Because there is already a state-mandated hearing aid benefit for individuals 21 years and younger,¹ the bill's effect would be to require coverage for individuals over the age of 21. The required coverage in the proposed mandate is less than in the existing children's coverage, so there is no incremental effect on children.

Massachusetts General Laws (MGLs) Chapter 3 §38C charges CHIA with, among other duties, reviewing the potential impact of proposed mandated healthcare insurance benefits on the premiums paid by businesses and consumers. CHIA has engaged BerryDunn to provide an actuarial estimate of the effect enactment of the bill would have on the cost of health insurance in the Commonwealth. The report is required to identify the effects on healthcare costs, including premium and administrative expenses, of the proposed mandate.

This report is not intended to determine whether S.B. 540 would constitute a health insurance benefit mandate for purposes of state defrayal under the Affordable Care Act (ACA), nor is it intended to assist with state defrayal calculations if it is determined to be a health insurance benefit mandate requiring state defrayal.

1.1 Current Insurance Coverage

BerryDunn surveyed 10 insurance carriers in the Commonwealth, and seven responded. In general, hearing aids are not currently covered for adults. However, three of the respondent carriers indicated that some fully insured large groups add a rider that includes coverage for hearing aids for adults. One carrier indicated that hearing aids are covered up to \$2,500 per hearing-impaired ear every three years.

No Commonwealth or federal law requires coverage of hearing aids for a hearing-impaired person or other person with additional sensory disabilities (i.e., other than hearing loss) over the age of 21. Under the ACA, essential health

ⁱ Pursuant to MGL c.112§196, a hearing aid shall have the following meaning: a wearable aid or device, not including surgical implants, which is inserted directly into the ear or worn with an ear mold and air conduction receiver or bone oscillator attachment and any part, attachment or accessory but excluding batteries, cords and accessories thereto, designed for or offered for the purpose of aiding or compensating for hearing loss.

ⁱⁱ It is assumed that the member must first pay the plan's deductible. A survey of Commonwealth carriers indicated is the current practice regarding the hearing aid mandated benefit for members 21 and younger.

benefits (EHBs) are defined by state benchmark plans.² The Commonwealth benchmark plan provides coverage for adult routine hearing exams and tests.³

1.2 Analysis

BerryDunn estimated the impact of S.B. 540 by assessing the incremental impacts of the requirement that insurers cover hearing aids for adults for one hearing aid per hearing-impaired ear per hearing-impaired person or other person with additional sensory disabilities, such as severe vision loss or blindness. Coverage includes all related services including the initial hearing aid evaluation, fitting and adjustments, and supplies, including ear molds. The incremental cost of hearing aids is estimated using claims data from the Massachusetts All-Payer Claims Database (APCD) to determine cost per service, or “unit cost” for these services. The number of adults anticipated to receive hearing aids is estimated using population data and academic literature. Combining the two components, and accounting for carrier retention, results in a baseline estimate of the proposed mandate’s incremental effect on premiums, which is projected over the five years following the assumed January 1, 2021, implementation date of the proposed law. The estimates assume carriers will fully comply with the provisions of the bill if it becomes law.

1.3 Summary Results

Table ES-1, on the following page, summarizes the estimated effect of S.B. 540 on premiums for fully insured plans over five years. This analysis estimates that the bill, if enacted as drafted for the 191st General Court, would increase fully insured premiums by as much as 0.36% on average over the next five years; a more likely increase is approximately 0.21%, equivalent to an average annual expenditure of \$31.5 million over the period 2021 – 2025.

The impact on premiums is driven by the cost of adding hearing aid coverage for adults between ages 22 and 64. Variation between scenarios is attributable to the uncertainty surrounding hearing loss rates, the portion of members with hearing loss who can benefit from hearing aids, hearing aid adoption rates, and how often people replace hearing aids.

The impact of the bill on any one individual, employer group, or carrier might vary from the overall results, depending on the current level of benefits each receives or provides, and on how those benefits would change under the proposed language. The summary results reflect the fact that some large employer groups offer adult hearing aid coverage as a rider, which reduced the overall estimated marginal cost by \$0.04 PMPM on average.

Table ES-1: Summary Results

	2021	2022	2023	2024	2025	WEIGHTED AVERAGE	FIVE-YEAR TOTAL
Members (000s)	1,990	2,014	2,010	2,007	2,003		
Medical Expense Low (\$000s)	\$11,951	\$17,192	\$17,593	\$18,014	\$18,457	\$17,617	\$83,207
Medical Expense Mid (\$000s)	\$18,369	\$26,315	\$26,816	\$27,344	\$27,900	\$26,835	\$126,745
Medical Expense High (\$000s)	\$31,806	\$45,307	\$45,904	\$46,536	\$47,206	\$45,894	\$216,759
Premium Low (\$000s)	\$14,042	\$20,201	\$20,671	\$21,166	\$21,687	\$20,700	\$97,768
Premium Mid (\$000s)	\$21,583	\$30,921	\$31,509	\$32,129	\$32,783	\$31,531	\$148,925
Premium High (\$000s)	\$37,372	\$53,235	\$53,937	\$54,680	\$55,467	\$53,925	\$254,691
PMPM Low	\$0.82	\$0.84	\$0.86	\$0.88	\$0.90	\$0.86	\$0.86
PMPM Mid	\$1.25	\$1.28	\$1.31	\$1.33	\$1.36	\$1.31	\$1.31
PMPM High	\$2.17	\$2.20	\$2.24	\$2.27	\$2.31	\$2.24	\$2.24
Estimated Monthly Premium	\$565	\$590	\$617	\$645	\$674	\$618	\$618
Premium % Rise Low	0.144%	0.142%	0.139%	0.136%	0.134%	0.139%	0.139%
Premium % Rise Mid	0.222%	0.217%	0.212%	0.207%	0.202%	0.212%	0.212%
Premium % Rise High	0.384%	0.373%	0.363%	0.352%	0.343%	0.363%	0.363%

Executive Summary Endnotes

¹ M.G.L. c.175 §47X, c.176A §8Y, c.176B §4EE, c.176G §4N, c.32A §23.

² Centers for Medicare & Medicaid Services (CMS), Center for Consumer Information and Insurance Oversight, Information on EHB Benchmark Plans. Accessed 5 October 2020: <https://www.cms.gov/ccio/resources/data-resources/ehb.html>.

³ CMS. Massachusetts State Required Benefits. Accessed 12 October 2020: https://downloads.cms.gov/ccio/State%20Required%20Benefits_MA.PDF.

2.0 Introduction

The Committee on Financial Services referred S.B. 540, “An Act providing hearing aids for persons with sensory impairedness,”ⁱ to CHIA for review. MGL Chapter 3 §38C requires CHIA to review and evaluate the potential fiscal impact of each mandated benefit bill referred to the agency by a legislative committee. The report is required to include the effects on healthcare costs, including premium and administrative expenses, of the proposed mandate.

Assessing the impact of the proposed mandate on premiums entails analyzing its incremental effect on spending by insurance plans. This, in turn, requires comparing spending under the provisions of the bill to spending under current statutes and current benefit plans for the relevant services.

This report is not intended to determine whether S.B. 540 would constitute a health insurance benefit mandate for purposes of state defrayal under the ACA, nor is it intended to assist with state defrayal calculations if it is determined to be a health insurance benefit mandate requiring state defrayal.

Section 3.0 of this analysis outlines the provisions and interpretations of the bill. Section 4.0 summarizes the methodology used for the estimate. Section 5.0 discusses important considerations in translating the bill’s language into estimates of its incremental impact on healthcare costs and steps through the calculations. Section 6.0 discusses results.

2.1 Background

Massachusetts S.B. 540, as submitted in the 191st General Court of the Commonwealth, requires coverage for the cost of one hearing aid per hearing-impaired ear per hearing-impaired person or other person with additional sensory disabilities, such as severe vision loss or blindness.ⁱⁱ The cost is required to be covered up to \$500 and 80% coverage of the next \$1,500 for each hearing aid,^{iv} every 24 months, upon a written statement from the treating physician that the hearing aids are necessary regardless of etiology.

Coverage also includes all related services prescribed by a licensed audiologist^v or hearing instrument specialist,^{vi} including the initial hearing aid evaluation, fitting and adjustments, and supplies, including ear molds. As set forth in the bill, the insured may choose a higher-priced hearing aid and may pay the difference in cost above the coverage limit set forth above without any financial or contractual penalty to the insured or to the provider of the hearing aid. Further, the benefits set forth in this proposed mandate shall not be subject to any greater deductible, coinsurance, copayments, or out-of-pocket limits than any other benefits provided by the insurer.

ⁱⁱ While not all the license types do not include the language “or other person with additional sensory disabilities such as severe vision loss or blindness,” this phrase is assumed to be applicable to all license types provided for in the bill.

^{iv} Pursuant to MGL c.112§196, a hearing aid shall have the following meaning: a wearable aid or device, not including surgical implants, which is inserted directly into the ear or worn with an ear mold and air conduction receiver or bone oscillator attachment and any part, attachment or accessory but excluding batteries, cords and accessories thereto, designed for or offered for the purpose of aiding or compensating for hearing loss.

^v Pursuant to MGL c.112§196, an audiologist shall mean: a person licensed as an audiologist in the Commonwealth.

^{vi} Pursuant to MGL c.112§196, a hearing instrument specialist shall mean: a person licensed as a hearing instrument specialist in the Commonwealth.

After referral of the bill to CHIA for review, CHIA and its consultants confirmed the following assumptions regarding the bill's intent:

1. The bill requires members to pay the lesser of the cost-share in the bill or the cost-share due to the insurance benefit structure.^{vii}
2. Because there is already a state-mandated hearing aid benefit for individuals 21 years and younger,^{viii} the bill's effect is to cover individuals over the age of 21. The required coverage in the proposed mandate is less generous than in the existing children's coverage, so there is no incremental effect on children.

3.0 Interpretation of S.B. 540

No Commonwealth or federal law requires coverage of hearing aids for adults. Additionally, no Commonwealth or federal law requires coverage of hearing aids for a hearing-impaired person or other person with additional sensory disabilities over the age of 21. Under the ACA, EHBs are defined by state benchmark plans.² The Massachusetts's benchmark plan covers adult routine hearing exams and tests.³

This report examines the cost impact of requiring coverage for hearing aids for adults who are age 22 and older.

3.1 Plans Affected by the Proposed Mandate

The bill as drafted amends statutes that regulate healthcare carriers in the Commonwealth. The bill includes the following sections, each of which address statutes dealing with a particular type of health insurance policy:

- Section 1: Chapter 32A – Plans Operated by the Group Insurance Commission (GIC) for the Benefit of Public Employees
- Section 2: Chapter 175 – Commercial Health Insurance Company Plans
- Section 3: Chapter 176A – Hospital Service Corporation Plans
- Section 4: Chapter 176B – Medical Service Corporation Plans
- Section 5: Chapter 176G – Health Maintenance Organization (HMO) Plans

Self-insured plans, except for those managed by the GIC, are not subject to state-level health insurance benefit mandates. State mandates do not apply to Medicare or Medicare Advantage plans, the benefits of which are qualified by Medicare; this analysis excludes members of fully insured commercial plans over 64 years of age and does not address any potential effect on Medicare supplement plans, even to the extent they are regulated by state law. Furthermore, this analysis does not apply to MassHealth.

^{vii} It is assumed that the member must first pay the plan's deductible, as a survey of Commonwealth carriers indicated is the current practice regarding the hearing aid mandated benefit for members 21 and younger.

^{viii} MGL. c.175 §47X, c.176A §8Y, c.176B §4EE, c.176G §4N, c.32A §23.

3.2 Covered Services

BerryDunn surveyed 10 insurance carriers in the Commonwealth, and seven responded. In general, hearing aids are not currently covered for adults. However, three of the respondent carriers indicated that some fully insured large groups add a rider that includes coverage for hearing aids for adults. One carrier indicated that hearing aids are covered up to \$2,500 per hearing-impaired ear every three years. Current coverage will be discussed in more detail in Section 5.5.

3.3 Existing Laws Affecting the Cost of S.B. 540

The bill's coverage requirements are not redundant to or in conflict with any existing state or federal coverage requirements.

4.0 Methodology

4.1 Overview

Estimating the impact of S.B. 540 on premiums requires assessing the incremental impacts of the requirement that insurers cover hearing aids for adults for one hearing aid per hearing-impaired ear per-impaired person or other person with additional sensory disabilities, such as severe vision loss or blindness. Coverage includes all related services, such as the initial hearing aid evaluation, fitting and adjustments, and supplies, including ear molds.

The provision including members with additional sensory disabilities, such as severe vision loss or blindness, did not add materially to the cost of the mandate. A literature review, coupled with insights from an expert, suggests that such individuals do not have a different hearing threshold to require hearing aids. The incremental cost of hearing aids is estimated using claims data from the Massachusetts APCD to determine cost per service, or "unit cost" for these services. The number of adults anticipated to receive hearing aids is estimated using population data and academic literature. Combining the two components, and accounting for carrier retention, results in a baseline estimate of the proposed mandate's incremental effect on premiums, which is projected over the five years following the assumed January 1, 2021, implementation date of the proposed law.

4.2 Data Sources

The primary data sources used in the analysis are:

- Information about the intended effect of the bill, gathered from the bill's presenting legislator
- Information, including descriptions of current coverage, from responses to a survey of commercial health insurance carriers in the Commonwealth
- The Massachusetts APCD
- Academic literature, published reports, and population data, cited as appropriate
- Discussion with clinical experts and providers

4.3 Steps in the Analysis

BerryDunn performed analytic steps summarized in this section to estimate the impact of S.B. 540 on premiums.

1. Estimated the marginal costs to insurers for hearing aids

To estimate the impact of the cost of hearing aids, BerryDunn:

- A.** Used claims data from the APCD and determined the unit cost per service for hearing aid devices, dispensing fees, fittings, and accessories
- B.** Used publicly available literature to determine hearing loss prevalence in the eligible adult population
- C.** Used publicly available literature to determine the target population who can benefit from the use of hearing aids
- D.** Used publicly available literature to determine hearing aid adoption rates among those hearing impaired
- E.** Adjusted the adoption rate for the removal of cost as a barrier, which is expected to induce some non-adopters to become adopters
- F.** Used publicly available data and the APCD to determine the binaural^{ix} rate (the number of hearing aid devices divided by the number of hearing aid users)
- G.** Multiplied the number of commercial, fully insured adults in the Commonwealth by the portion of eligible adults obtained in Step B, by the target population percentage in Step C, by the hearing aid adoption rate in Step D, and by the adjustment for the removal of cost as a barrier in Step E to determine the number of hearing aid users
- H.** Multiplied the number of users from Step G by the binaural rate in Step F to estimate the total number of hearing aid devices in use after coverage is effective
- I.** Multiplied the estimated number of hearing aid devices from Step H by the corresponding unit cost in Step A to determine the incremental cost of hearing aid devices
- J.** Multiplied the estimated number of users from Step G by the corresponding unit cost in Step A to determine the incremental cost of other hearing aid services

2. Estimated the replacement timing of hearing aid devices and annual marginal costs

To estimate the hearing aid purchase timing and calculate the annual marginal cost, BerryDunn:

- A.** Estimated what proportion of potential purchases would occur in the first year the coverage becomes available (assumed to be 2021), and how often hearing aids are replaced using a cyclical replacement factor
- B.** Multiplied the estimated baseline cost by portion of replacements that would occur each year, considering the annual increase in unit cost, to calculate annual cost
- C.** Projected the baseline cost forward over the five-year analysis period using an estimated increase in professional services and in hearing aid devices over the period

^{ix} Related to or used with both ears.

3. Calculated the impact of existing coverage and its impact on the total marginal cost estimate

To calculate the cost of existing coverage and its impact on the total marginal cost, BerryDunn:

- A. Used claims data from the APCD and determined the total cost for hearing aid devices, dispensing fees, fittings, and accessories
- B. Divided the total claims cost for hearing aid devices, dispensing fees, fittings, and accessories by the total commercial, fully insured members to calculate PMPM cost for existing coverage
- C. Projected PMPM claims cost over the analysis period using an estimated increase in professional services and in hearing aid devices
- D. Subtracted the PMPM claims cost for existing coverage from the total estimated cost of hearing aid coverage to estimate the marginal cost for fully insured membership in the Commonwealth

4. Calculated the impact of the projected claim costs on insurance premiums

To calculate the impact on health insurance premiums, BerryDunn:

- A. Estimated the fully insured Commonwealth population under age 65, projected for the next five years (2021 – 2025)
- B. Multiplied the estimated incremental paid PMPM cost of the mandate by the projected population estimate to calculate the total estimated marginal claims cost of S.B. 540
- C. Estimated insurer retention (administrative costs, taxes, and profit) and applied the estimate to the final incremental claims cost calculated in Step B

4.4 Limitations

In general, carriers do not currently provide coverage for hearing aids for adults in Massachusetts. However, some carriers do offer a hearing aid rider so the unit cost could be determined from APCD claims. However, BerryDunn does not have information on specific carrier accounts and their associated covered members, so the firm could not use this subset data to determine representative PMPM values that might be used as estimates of the PMPM costs for the whole population.

The hearing loss rate and the number of hearing aid users are uncertain. The available literature with hearing loss prevalence data is from 2001 through 2008 and is not specific to the Massachusetts population. Hearing loss rates also vary depending upon employee industry. Hearing loss rates were derived from a study of the total U.S. population, and the Massachusetts fully insured population's industry mix might differ from the total U.S. population. According to the Hearing Loss Association of America, about 40 million U.S. adults aged 20 – 69 years have noise-induced hearing loss, or roughly 44% of all adults in that age range.⁴ A Centers for Disease Control and Prevention (CDC) study about noise-induced hearing loss among adults indicated that persons exposed to loud noise at work were twice as likely to suffer from hearing loss.⁵ This significantly impacts the overall prevalence rates of people with hearing loss. According to the American Speech-Language-Hearing Association, workers who are likely to experience hearing loss include firefighters and other first responders, members of the military, subway workers,

construction workers, musicians, factory workers, and mine workers.⁶ Individual employer groups might fall outside of the cost range depending upon their industry.^x

In addition, there is uncertainty on hearing aid adoption rates regarding the portion of members with hearing loss who can benefit from hearing aids as well as the impact of the availability of insurance coverage. The available literature on the impact of insurance coverage on hearing aid adoption rates is not recent.

Finally, BerryDunn did not adjust for a potential impact of COVID-19 on the number of hearing aid services. A COVID-19 surge could reduce the number of fully insured members receiving hearing aid services. COVID-19 has impacted the number of commercial, fully insured members in 2020. Fully insured membership declined due to increased unemployment. The impact that COVID-19 will have on unemployment in the 2021 – 2025 projection period is uncertain.

The more detailed, step-by-step description of the estimation process in the next sections addresses these uncertainties further.

5.0 Analysis

This section describes the calculations outlined in the previous section in more detail. The analysis includes development of a best estimate middle-cost scenario, as well as a low-cost scenario using assumptions that produced a lower estimate and a high-cost scenario using more conservative assumptions that produced a higher-estimated cost impact.

Section 5.1 describes the steps used to calculate the unit cost of hearing aid devices, dispensing fees, fittings, and accessories. Section 5.2 describes the steps used to calculate the total number of hearing aid users and hearing aid devices. Section 5.3 describes the steps to calculate the baseline costs for hearing aids and related services. Section 5.4 describes the steps to estimate the hearing aid replacement timing and annual cost over the projection period, assuming no hearing aid coverage was in effect. Section 5.5 describes the steps to calculate the cost of existing coverage for employer groups that cover hearing aids as a rider and the impact on the overall margin cost of S.B. 540 on fully insured premiums. Section 5.6 projects the fully insured population age 0 – 64 in the Commonwealth over the 2021 – 2025 analysis period. Section 5.7 adjusts the projected marginal costs for carrier retention to arrive at an estimate of the bill's effect on premiums for fully insured plans.

5.1 Unit Cost Per Service

Estimated the unit cost of hearing aid devices, dispensing fees, fittings, and accessories

BerryDunn used claims data from the APCD to calculate the unit cost per hearing aid device per user for dispensing fees, fittings, and accessories. The average unit cost of a hearing aid device was calculated from 2016 – 2018 APCD claim data using allowed amounts. Allowed amounts are the contractual payment amounts that carriers would pay

^xThe GIC is in APCD data their hearing aid cost PMPM falls below the low end of the cost range.

providers prior to member cost sharing. Limited data on hearing aids among adults was available, so BerryDunn used both fully insured and self-insured claims^{xi} in its analysis to increase its sample when calculating the average unit cost. BerryDunn defined each “unit” as a single hearing aid, whereby a monaural device (one hearing aid) was considered one “unit” and a binaural device (two hearing aids) was considered two “units.” This was necessary to calculate the impact of S.B. 540’s benefit limits of \$500 plus 80% of the next \$1,500 per hearing aid per hearing-impaired ear.

The average unit cost of a hearing aid for adults was \$1,573; however, the average allowed unit cost under the bill’s benefit limits was \$1,271. Accounting for member cost share, the amount paid by the carrier was \$1,088. BerryDunn conducted similar calculations for children, and the average unit cost of a hearing aid was \$1,924. Current law mandates a \$2,000 benefit for each ear for children every three years; if benefit limits under the current law were applied, the average allowed unit cost would be \$1,673. This indicates that, in some cases, carriers’ allowed benefits are higher than the mandated benefit requirements. If S.B. 540 is enacted, some carriers’ benefits could be higher than the proposed mandate requirements. However, BerryDunn’s analysis limits benefits to those cited in S.B. 540. If carriers offer benefits beyond those required in the proposed mandate, the additional benefits are not considered incremental to S.B. 540.

S.B. 540 also requires coverage for dispensing fees. According to an article in *audiologyonline*, hearing aid providers often bundle hearing aid services, including the dispensing fee, as part of their pricing strategy.⁷ BerryDunn’s claims analysis found that less than 5% of hearing aid users had a separate dispensing fee associated with coverage of a hearing aid device, indicating that the majority of providers in the Commonwealth bundle dispensing fees. The average, total cost of a hearing aid device and dispensing fee was slightly less among providers who bundled those services, relative to those who billed for them separately. BerryDunn used the slightly more conservative assumption of the average bundled price for hearing aid devices and dispensing fees for the estimated cost. Bundled prices are reflected in BerryDunn’s unit cost estimates above, as well as those below in Table 1.

S.B. 540 also requires coverage for costs associated with accessories, fittings, and maintenance. These costs were calculated on a per-user basis with available APCD claims data. The per-user unit costs are reflected in Table 1.

Table 1: Estimated 2018 Paid Unit Cost of Hearing Aid Devices and Services

	UNIT COST
Devices Per Hearing Aid	\$1,088
Accessories Per User	\$1.54
Fittings and Maintenance Per User	\$246.66

^{xi} With the Supreme Court *Gobeille v. Liberty Mutual Insurance Co* ruling in 2016, states can no longer require self-insured health plans to submit their health claims data for use in the APCD. As a result, self-insured data is much more limited, with only about 25% of the membership represented in the APCD.

5.2 Number of Hearing Aid Users and Devices

Estimated the number of hearing aid users and the number of hearing aid devices for adults over the age of 21

S.B. 540 requires insurers to cover hearing aids for adults over the age of 21. BerryDunn multiplied hearing loss prevalence rates from a 2020 American Medical Association study by the number of eligible adults aged 22 – 64, by age cohort, in the Commonwealth.⁸ BerryDunn estimated that approximately 17% of adults suffer from hearing loss. In 2015, the CDC reported on adults with hearing loss in the United States, with rates including individuals who were deaf.⁹ BerryDunn conducted similar analyses using hearing loss rates from this CDC study, and found that 13% of the eligible population in the Commonwealth suffered from hearing loss. BerryDunn applied a hearing loss prevalence range of 13% – 17% of the adult population in the Commonwealth.

Not every person with hearing loss can benefit from hearing aids. According to the National Institute on Deafness and Communication Disorders, people with sensorineural hearing loss, including those with mixed hearing loss (e.g., sensorineural and conductive hearing loss), can be assisted using hearing aids and are S.B. 540's target population. According to a 2012 study by The American Family Physician, roughly 90% of older adults with hearing loss suffer from sensorineural hearing loss.¹⁰ BerryDunn assumed 90% of individuals with hearing loss represent those who would benefit from hearing aids.

The National Institute on Deafness and Communication Disorders and the Office of Disease Prevention and Health Promotion^{11,12} estimate that the hearing aid adoption rate for adults with hearing loss between the ages of 20 – 69 is 16%. BerryDunn assumed a 16% adoption rate for the under-65 population included in this analysis, but adjusted it to reflect the impact of expanding insurance coverage. Economic research finds that the presence of insurance coverage affects consumer behavior, with consumers being more likely to use healthcare services if those services are covered by insurance. BerryDunn's review of the literature on price elasticities (i.e., the degree to which demand changes with changes in the out-of-pocket price to the consumer) indicated that insurance coverage for hearing aids could increase the number of adopters by as much as 38%.^{13,14} While many factors prevent people with hearing loss from wearing hearing aids, BerryDunn expects the removal of cost as a barrier would induce some non-adopters to purchase them. BerryDunn assumes this effect would be modest, or a roughly 15% – 35% increase from baseline levels, due to stigma and other non-financial reasons for not adopting hearing aids.

BerryDunn multiplied the hearing loss rate, target population rate, and adoption rate to calculate a prevalence rate of adults using hearing aids. Based on BerryDunn's assumptions, the hearing aid use prevalence rate is between 1.9% – 2.4%, with a mid-level value of 2.2%—not accounting for increases in demand due to the introduction of insurance coverage. Once the coverage effects are factored in the range of prevalence rate estimates becomes 2.2% – 3.3%, with a mid-level value of 2.7%. Not every hearing-impaired person requires a hearing aid in both ears. However, many adults will use hearing aids in both ears, either because the loss is binaural or bilateral, or because the use of two hearing aids provides more appropriately balanced and clearer sound amplification. The rate of binaural hearing correction converts “bodies” into “ears,” and adopters who use two hearing aids must be factored into spending estimates. An American Medical Association study of hearing loss prevalence in the United States identified hearing loss prevalence in one ear and in both ears by age cohort.¹⁵ Once findings from hearing loss studies are adjusted for the eligible population by age group in the Commonwealth, BerryDunn estimates that about 50% have hearing loss in

both ears, and a binaural rate of 1.5. BerryDunn also analyzed APCD data and compared the number of devices purchased to the number of adult users purchasing devices. BerryDunn found a binaural factor that ranged from 1.55 – 1.65 over the 2016 – 2018 period. BerryDunn used this range to estimate the number of hearing aids purchased.

Based on a Commonwealth population study included in Appendix A, there were approximately 2.031M commercial fully insured individuals age 64 and younger in 2018. Of these 2.031M individuals, BerryDunn estimates there were 1,572,682 fully insured adults. . BerryDunn multiplied the number of fully insured adults by the rate of hearing loss, the targeted population percentage, the rate of hearing aid adoption, and the binaural rate to calculate an approximate number of “hearing aids in use.” Table 2 presents these results.

Table 2: Estimated 2018 Number of Hearing Aid Users and Devices

SCENARIOS		PER HEARING AID	ELASTICITY	ADJUSTED
Low Scenario	Hearing Loss Rate	13.0%		13.0%
	Target Population	90.0%		90.0%
	Adoption Rate	16.0%	1.15	18.4%
	Binaural Rate	1.55		1.55
	Hearing Aid Users			33,857
	Hearing Aids in Use			52,478
Mid Scenario	Hearing Loss Rate	15.0%		15.0%
	Target Population	90.0%		90.0%
	Adoption Rate	16.0%	1.25	20.0%
	Binaural Rate	1.60		1.60
	Hearing Aid Users			42,462
	Hearing Aids in Use			67,940
High Scenario	Hearing Loss Rate	17.0%		17.0%
	Target Population	90.0%		90.0%
	Adoption Rate	16.0%	1.35	21.6%
	Binaural Rate	1.65		1.65
	Hearing Aid Users			51,974
	Hearing Aids in Use			85,757

5.3 Total Baseline Costs

Estimated total marginal costs to insurers to cover hearing aids

BerryDunn multiplied the number of users and devices in Table 2 by the unit costs in Table 1 to estimate baseline costs. Table 3, on the following page, presents estimated baseline costs, which illustrate the “immediate replacement cost for all hearing aids in use.” This is based on the estimated number of hearing aids in use in the affected population and the estimated unit prices derived from APCD data for cases where coverage is currently provided. The baseline represents the incurred costs for devices if all were purchased at one time. Under the mid-level scenario assumptions, total replacement cost for devices is \$73.9 million.

Table 3: Estimated Total Baseline Cost for all Hearing Aid Users

	DEVICES	SERVICES	ACCESSORIES	TOTAL COST
Low Scenario	\$57,095,944	\$8,350,953	\$52,275	\$65,499,172
Mid Scenario	\$73,918,581	\$10,473,603	\$65,562	\$84,457,746
High Scenario	\$93,303,729	\$12,819,691	\$80,248	\$106,203,667

5.4 Replacement Timing and Annual Marginal Cost

Estimated marginal costs to insurers to cover hearing aids each year

Calculating annual costs requires estimating the number of devices purchased in any given year, which could vary due to numerous factors. This required that BerryDunn first project the proportion of hearing aid purchases that would occur during the first year of coverage requirements (assumed to be 2021), followed by how frequently the hearing aids would be replaced. Hearing aids last, on average, between three and seven years. BerryDunn’s analysis of 2016 – 2018 APCD data indicated that 97% of members who had hearing aid coverage and purchased a hearing aid did not replace the device within a three-year period. These findings also applied to the GIC, whose coverage allowed the device to be replaced every two years. Such findings indicate that the insured members replace hearing aids less frequently than every two years, even when coverage allows it. In the low scenario, BerryDunn assumed that hearing aid replacement would occur on average every seven years; in the mid scenario, BerryDunn assumed that hearing aid replacement would occur on average every five years; and in the high scenario, BerryDunn assumed that covered members would replace their hearing aids every three years. Table 4 presents the assumed replacement schedules under three different scenarios.

Table 4: Hearing Aid Replacement Schedule

	2021	2022	2023	2024	2025
Low Scenario	14.3%	14.3%	14.3%	14.3%	14.3%
Mid Scenario	20.0%	20.0%	20.0%	20.0%	20.0%
High Scenario	33.3%	33.3%	33.3%	33.3%	33.3%

To determine the annual hearing aid device cost, BerryDunn first estimated the total number of hearing aid users each year. BerryDunn calculated total annual users by multiplying the projected number of fully insured adults in the Commonwealth each year by the product of the rate of hearing loss, the targeted population percentage, and the rate of hearing aid adoption (from Table 2). Appendix A describes a projection of fully insured membership in the Commonwealth for the next five years. This projection is by age, and the number of adults was calculated using this projection. The total number of users by year is presented on the following page in Table 5.

Table 5: Total Users by Year

	2021	2022	2023	2024	2025
Low Scenario	33,238	33,653	33,598	33,549	33,505
Mid Scenario	41,686	42,206	42,138	42,077	42,022
High Scenario	51,024	51,661	51,577	51,502	51,435

Next, BerryDunn estimated the number of devices that would be purchased each year. BerryDunn multiplied the total number of users by the binaural rate (from Table 2) and by the annual replacement percentage (from Table 4) to calculate the number of hearing aids replaced each year. The estimated annual number of devices is displayed in Table 6.

Table 6: Total Annual Number of Hearing Aid Devices

	2021	2022	2023	2024	2025
Low Scenario	7,360	7,452	7,440	7,429	7,419
Mid Scenario	13,340	13,506	13,484	13,465	13,447
High Scenario	28,035	28,385	28,339	28,298	28,261

Device costs are expected to increase over time with inflation; however, hearing aid unit costs might remain stable because as hearing aid technology advances, the cost of devices is anticipated to decrease. Thus, BerryDunn assumed no change to the unit cost of hearing aid devices over time, which is supported by a three-year review of APCD data. BerryDunn projected changes in unit costs for hearing aid accessories, fittings, and tests by using long-term average national projections for cost increases to physician and clinical services.¹⁶ BerryDunn multiplied the number of users by the unit cost for fittings and accessories, then multiplied the estimated annual number of devices by the corresponding unit cost for hearing aids to estimate the annual, marginal cost (Table 7).

Table 7: Estimated Annual Marginal Cost of Hearing Aids and Related Services

	2021	2022	2023	2024	2025
Low Scenario	\$12,569,318	\$18,084,327	\$18,507,694	\$18,953,022	\$19,421,373
Mid Scenario	\$18,987,535	\$27,207,469	\$27,731,155	\$28,283,071	\$28,864,556
High Scenario	\$32,424,589	\$46,198,589	\$46,818,800	\$47,475,530	\$48,170,420

BerryDunn divided the annual, marginal cost by the corresponding membership to estimate the incremental PMPM amount (Table 8).

Table 8: Estimated Marginal PMPM Cost of Hearing Aids

	2021	2022	2023	2024	2025
Low Scenario	\$0.73	\$0.75	\$0.77	\$0.79	\$0.81
Mid Scenario	\$1.10	\$1.13	\$1.15	\$1.17	\$1.20
High Scenario	\$1.88	\$1.91	\$1.94	\$1.97	\$2.00

5.5 Existing Coverage

Estimated the annual claims cost of hearing aid devices, dispensing fees, and fitting and accessories for fully insured members who currently have coverage

The results of the carrier survey indicated that only one respondent carrier covers hearing aids as part of its standard benefit packages. Several respondent carriers indicated that they offer hearing aid coverage as an optional rider for large employers interested in including this coverage. A review of the APCD indicated that most of the carriers offer hearing aid coverage as an optional rider.

Routine hearing screening is covered as a preventive benefit at any age in the benchmark plan. This includes hearing screening for adults and the services of audiologists for diagnosis of hearing-related problems, which are apparent in the significant costs associated with hearing tests. The limited availability of coverage for hearing aids for adults is reflected in the PMPMs in Table 9, other than testing. These numbers reflect the total amount of hearing aids and associated service paid claims in the adult population (for those limited number having the benefit) divided by the entire fully insured population. As a result, the PMPM levels are small.

Table 9: Fully Insured Annual Claims Cost for Existing Coverage

	2018
Dispensing Fees	\$0.000
Exams and Fittings	\$0.019
Devices	\$0.014
Accessories	\$0.000
Hearing Exams	\$0.071
Total	\$0.104

BerryDunn used the long-term average national projection for cost increases to physical and clinical services to project unit cost increases for accessories, hearing aid fittings, and tests.¹⁷ BerryDunn assumed that hearing aid device unit cost would be flat. BerryDunn multiplied the PMPM amounts from Table 9 by the annual trend factors to estimate the PMPM cost of hearing aids and related services for existing coverage over the projection period (Table 10).

Table 10: Fully Insured PMPM Cost of Existing Coverage for Hearing Aids

	2021	2022	2023	2024	2025
	\$0.04	\$0.04	\$0.04	\$0.04	\$0.04

Subtracting estimated PMPM costs for existing coverage (Table 10) from the PMPM cost associated with hearing aids for all commercial, fully insured adults (Table 8) yields the PMPM marginal cost, shown in Table 11.

Table 11: Estimated Marginal PMPM Cost of Hearing Aids

	2021	2022	2023	2024	2025
Low Scenario	\$0.69	\$0.71	\$0.73	\$0.75	\$0.77
Mid Scenario	\$1.07	\$1.09	\$1.11	\$1.14	\$1.16
High Scenario	\$1.85	\$1.87	\$1.90	\$1.93	\$1.96

5.6 Projected Fully Insured Population in the Commonwealth

Table 12 presents the projected, fully insured population in the Commonwealth (ages 0 to 64) from 2021 through 2025. Appendix A describes the projection methodology and sources of these values.

Table 12: Projected Fully Insured Population in the Commonwealth, Ages 0 – 64

YEAR	TOTAL (0 – 64)
2021	1,989,786
2022	2,014,007
2023	2,010,132
2024	2,006,510
2025	2,003,142

5.7 Total Marginal Medical Expense

Multiplying the total estimated PMPM cost by the projected fully insured membership over the analysis period (2021 – 2025) results in the total cost (medical expense) associated with the proposed requirement, as shown on the following page in Table 13. BerryDunn’s analysis assumes the bill, if enacted, would be effective on January 1, 2021.^{xii}

Table 13: Estimated Marginal Cost of Hearing Aids

	2021	2022	2023	2024	2025
Low Scenario	\$11,950,697	\$17,192,268	\$17,592,717	\$18,013,985	\$18,457,081
Mid Scenario	\$18,368,914	\$26,315,410	\$26,816,177	\$27,344,035	\$27,900,264
High Scenario	\$31,805,967	\$45,306,531	\$45,903,823	\$46,536,493	\$47,206,129

5.8 Carrier Retention and Increase in Premium

Carriers include their retention expense in fully insured premiums. Retention expense includes general administration, commissions, taxes, fees, and contribution to surplus or profit. Assuming an average retention rate of 14.9% based on CHIA’s analysis of fully insured premium retention in the Commonwealth,¹⁸ the increase in medical expense was adjusted upward to approximate the total impact on premiums (Table 14).

Table 14: Estimate of Increase in Carrier Premium Expense

	2021	2022	2023	2024	2025
Low Scenario	\$14,042,047	\$20,200,884	\$20,671,410	\$21,166,399	\$21,687,037
Mid Scenario	\$21,583,441	\$30,920,559	\$31,508,959	\$32,129,191	\$32,782,759
High Scenario	\$37,371,954	\$53,235,091	\$53,936,908	\$54,680,295	\$55,467,115

^{xii} The analysis assumes the mandate would be effective for policies issued and renewed on or after January 1, 2021. Based on an assumed renewal distribution by month, by market segment, and by the Commonwealth market segment composition, 72.1% of the member months exposed in 2021 will have the proposed mandate coverage in effect during calendar year 2021. The annual dollar impact of the mandate in 2021 was estimated using the estimated PMPM and applying it to 72.1% of the member months exposed.

6.0 Results

The estimated impact of the proposed requirement on medical expense and premiums is explained in Section 6.1 and summarized on the following page in Table 15. The analysis includes development of a best estimate “mid-level” scenario, as well as a low-level scenario using assumptions that produced a lower estimate and a high-level scenario using more conservative assumptions that produced a higher estimated impact.

The impact on premiums is driven by the provisions of S.B. 540 that require carriers to cover hearing aids for adults between the ages of 22 and 64. Variation between scenarios is attributable to the uncertainty surrounding the hearing loss rate, the portion of those with hearing loss who can benefit from hearing aids, and the hearing aid adoption rate.

6.1 Five-Year Estimated Impact

Table 15 presents the projected net impact of S.B. 540 on medical expense and premiums for each year over the 2021 – 2025 period using a projection of Commonwealth fully insured membership. The low scenario would result in \$20.7 million per year on average. It assumes a hearing loss prevalence of 13%; that 90% of individuals with hearing loss can benefit from a hearing aid; and that 18.4% of eligible adults will adopt a hearing aid. The high scenario’s projected impact is \$53.9 million and assumes hearing loss prevalence of 17%; that 90% with hearing loss can benefit from a hearing aid; and that 21.6% of eligible adults will adopt a hearing aid. The mid scenario would result in average, annual costs of \$31.5 million, or an average of 0.21% of premiums. It assumes hearing loss prevalence of 15%; that 90.0% of individuals with hearing loss can benefit from a hearing aid; and 20.0% of eligible adults will adopt a hearing aid.

The impact of the proposed law on any one individual, employer group, or carrier might vary from the overall results, depending on the current level of benefits each receives or provides and on how benefits would change under the proposed language. BerryDunn’s results reflect a reduction in the overall, marginal costs resulting from some large employer groups that offer adult hearing aid coverage as a rider.

Table 15: Summary Results

	2021	2022	2023	2024	2025	WEIGHTED AVERAGE	FIVE-YEAR TOTAL
Members (000s)	1,990	2,014	2,010	2,007	2,003		
Medical Expense Low (\$000s)	\$11,951	\$17,192	\$17,593	\$18,014	\$18,457	\$17,617	\$83,207
Medical Expense Mid (\$000s)	\$18,369	\$26,315	\$26,816	\$27,344	\$27,900	\$26,835	\$126,745
Medical Expense High (\$000s)	\$31,806	\$45,307	\$45,904	\$46,536	\$47,206	\$45,894	\$216,759
Premium Low (\$000s)	\$14,042	\$20,201	\$20,671	\$21,166	\$21,687	\$20,700	\$97,768
Premium Mid (\$000s)	\$21,583	\$30,921	\$31,509	\$32,129	\$32,783	\$31,531	\$148,925
Premium High (\$000s)	\$37,372	\$53,235	\$53,937	\$54,680	\$55,467	\$53,925	\$254,691
PMPM Low	\$0.82	\$0.84	\$0.86	\$0.88	\$0.90	\$0.86	\$0.86
PMPM Mid	\$1.25	\$1.28	\$1.31	\$1.33	\$1.36	\$1.31	\$1.31
PMPM High	\$2.17	\$2.20	\$2.24	\$2.27	\$2.31	\$2.24	\$2.24
Estimated Monthly Premium	\$565	\$590	\$617	\$645	\$674	\$618	\$618
Premium % Rise Low	0.144%	0.142%	0.139%	0.136%	0.134%	0.139%	0.139%
Premium % Rise Mid	0.222%	0.217%	0.212%	0.207%	0.202%	0.212%	0.212%
Premium % Rise High	0.384%	0.373%	0.363%	0.352%	0.343%	0.363%	0.363%

The total projected medical expense and premium dollars are calculated using PMPM results and the projected fully insured membership from 2021 – 2025. Due to the impact of COVID-19 on the economy, there is a great deal of uncertainty around the anticipated level of commercial fully insured membership over the next five years. In 2020, commercial fully insured membership is approximately 3% less than 2019, with a shift to both uninsured and MassHealth coverage. BerryDunn is conservatively assuming economic recovery by 2022. Given this scenario, the impact for 2021 is a decrease of approximately \$0.3 million in premium over the level anticipated pre-COVID-19 in the mid-scenario. Please refer to Appendix A for additional discussion on the membership projection.

6.2 Impact on the GIC

Effective July 1, 2018, all GIC plans were converted to self-insured funding. BerryDunn assumes that the proposed legislative change would apply to self-insured plans operated for state and local employees, with an effective date for all GIC policies on July 1, 2021.

Although the benefit offerings of GIC plans are similar to those of most other commercial plans in the Commonwealth, BerryDunn's carrier surveys indicated that the GIC already includes coverage for hearing aids. GIC's hearing aid benefit pays 100% of the first \$500 in spending and 80% of the next \$1,500, once every two years. The maximum benefit is the same as the benefit proposed in S.B. 540. Therefore, the marginal impact of S.B. 540 on the GIC is zero. As such, S.B. 540 will have no material effect on the GIC claims expense over the 2021 – 2025 projection period.

Endnotes

- ¹ The 191st General Court of the Commonwealth of Massachusetts, Senate Bill, “An Act providing hearing aids for persons with sensory impairedness.” Accessed 5 October 2020: <https://malegislature.gov/Bills/191/S540>.
- ² Centers for Medicare and Medicaid Services (CMS), Center for Consumer Information and Insurance Oversight, Information on EHB Benchmark Plans. Accessed 5 October 2020: <https://www.cms.gov/cciio/resources/data-resources/ehb.html>.
- ³ CMS. Massachusetts State Required Benefits. Accessed 12 October 2020: https://downloads.cms.gov/cciio/State%20Required%20Benefits_MA.PDF. Emergency Services: M.G.L.c.175§47U(e); M.G.c.176A§8U(e); M.G.L.c.176B§4U(e); M.G.L.c.176G§5(e). Mental health care: M.G.L.c.175§47B(g); M.G.L.c.176A§8A(g); M.G.L.c.176B§4A(g); M.G.L.c.176G§4M(g).
- ⁴ The Hearing Loss Association of America, Noise Induced Hearing Loss. Accessed 22 October 2020: https://www.hearingloss.org/hearing-help/hearing-loss-basics/prevention/?gclid=EAlaIqobChMI8l_p-e71AIVCaGzCh2PHg1VEAAYASAAEgJk9PD_BwE.
- ⁵ The Centers for Disease Control and Prevention, Vital Signs Noise Induce Hearing Loss Among Adults. Accessed 22 October 2020: https://www.cdc.gov/mmwr/volumes/66/wr/mm6605e3.htm#T1_down.
- ⁶ The American Speech-Language-Hearing Association, Noise at work. Accessed 10 November 2020: <https://www.asha.org/public/hearing/noise-at-work/>.
- ⁷ Audiology One Line, Pricing Strategies for Diagnostic and Treatment Services. Accessed 30 October 2020: <https://www.audiologyonline.com/articles/pricing-strategies-for-diagnostic-and-11437>.
- ⁸ The American Medical Association, Hearing Loss Prevalence in the United States. Accessed 12 October 2020: <https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/1106004>.
- ⁹ The Centers for Disease Control and Prevention, Health Disparities among Adults with Hearing Loss; United States 2000-2006, Reported 2015. Accessed 12 October 2020: <https://www.cdc.gov/nchs/data/hestat/hearing00-06/hearing00-06.htm>.
- ¹⁰ The American Family Physician, Hearing Loss in Older Adults. Accessed 12 October 2020: <https://www.aafp.org/afp/2012/0615/p1150.html>.
- ¹¹ The National Institute on Deafness, Quick Statistics about Hearing. Accessed 12 October 2020: <https://www.nidcd.nih.gov/health/statistics/quick-statistics-hearing>.
- ¹² The Office of Disease Prevention and Health Promotion, Hearing and other Sensory Communication Disorders. Accessed 14 October 2020: <https://www.healthypeople.gov/2020/topics-objectives/topic/hearing-and-other-sensory-or-communication-disorders/objectives>.
- ¹³ Audiology on- Line, The Impact of Elasticity of Demand on Price in the Hearing Aid Market. Accessed 23 October 2020: <https://www.audiologyonline.com/articles/impact-elasticity-demand-on-price-955>.
- ¹⁴ Research Gate, Increasing total revenue in an inelastic hearing aid Market Accessed 23 October 2020: https://www.researchgate.net/publication/235289355_Increasing_total_revenue_in_an_inelastic_hearing_aid_market.
- ¹⁵ The American Medical Association, Hearing Loss Prevalence in the United States. Accessed 23 October 2020: <https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/1106004>.

¹⁶ U.S. Centers for Medicare and Medicaid Services (CMS), Office of the Actuary. National Health Expenditure Projections. Table 7, Physician and Clinical Services Expenditures; Aggregate and per Capita Amounts, Percent Distribution and Annual Percent Change by Source of Funds: Calendar Years 2019-2025; Private Insurance. Accessed 19 October 2020:

<https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NationalHealthAccountsProjected>.

¹⁷ U.S. Centers for Medicare and Medicaid Services (CMS), Office of the Actuary. National Health Expenditure Projections. Table 7, Physician and Clinical Services Expenditures; Aggregate and per Capita Amounts, Percent Distribution and Annual Percent Change by Source of Funds: Calendar Years 2019-2025; Private Insurance. Accessed 19 October 2020:

<https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NationalHealthAccountsProjected.html>.

¹⁸ Massachusetts Center for Health Information and Analysis. Annual Report on the Massachusetts Health Care System, September 2019. Accessed 29 October 2020: <http://www.chiamass.gov/annual-report>.

Appendix A: Membership Affected by the Proposed Language

Membership potentially affected by proposed mandated change criteria include Commonwealth residents with fully insured, employer-sponsored health insurance issued by a Commonwealth-licensed company (including through the GIC); non-residents with fully insured, employer-sponsored insurance issued in the Commonwealth; Commonwealth residents with individual (direct) health insurance coverage; and lives covered by GIC self-insured coverage.

Please note these are unprecedented economic circumstances, due to COVID-19, which makes the estimation of membership extremely challenging. 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. As such, given the uncertainty, BerryDunn took a simplified approach to the membership projections as described below. These membership projections are not intended to be used for any other purpose than producing the total dollar range in this study. Further, to assess how recent volatility in commercial enrollment levels may affect these cost estimates, please note that the PMPM and percent 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.

The 2018 Massachusetts APCD formed the base for the projections. The Massachusetts APCD provided fully insured membership by insurance carrier. The Massachusetts APCD was also used to estimate the number of non-residents covered by a Commonwealth policy. These are typically cases in which a non-resident works for a Commonwealth employer that offers employer-sponsored coverage. Adjustments were made to the data for membership not in the Massachusetts APCD, based on published membership reports available from CHIA and the Massachusetts Department of Insurance (DOI).

CHIA publishes monthly enrollment summaries in addition to its biannual enrollment trends report and supporting databook (enrollment-trends-March-2020-databook¹ and Monthly Enrollment Summary – August 2020²), which provides enrollment data for Commonwealth residents by insurance carrier for most carriers. (Some small carriers are excluded.) CHIA uses supplemental information beyond the data in the Massachusetts APCD to develop its enrollment trends report. The supplemental data was used to adjust the resident totals from the Massachusetts APCD. In 2020, commercial, fully insured membership is 2.9% less than in 2019 with a shift to both uninsured and MassHealth coverage. The impact of COVID-19 on fully insured employers over the five-year projected period is uncertain. BerryDunn took a high-level conservative approach and assumed that membership would revert to 2019 levels by January 1, 2022. Given this approach, the 2021 assumption is dependent upon emerging 2020 fully insured membership levels.

The DOI published reports titled Quarterly Report of HMO Membership in Closed Network Health Plans as of December 31, 2018³ and Massachusetts Division of Insurance Annual Report Membership in MEDICAL Insured Preferred Provider Plans by County as of December 31, 2018⁴. These reports provide fully insured covered members for licensed Commonwealth insurers where the member's primary residence is in the Commonwealth. The DOI reporting includes all insurance carriers and was used to supplement the Massachusetts APCD membership for small carriers not in the Massachusetts APCD.

The distribution of members by age and gender was estimated using Massachusetts APCD population distribution ratios, and was checked for reasonableness and validated against U.S. Census Bureau data.⁵ Membership was projected from 2020 – 2025 using Massachusetts Department of Transportation population growth rate estimates by age and gender.⁶

Projections for the GIC self-insured lives were developed using the GIC base data for 2018, and 2019 received directly from the GIC as well as the same projected growth rates from the Census Bureau that were used for the Commonwealth population. Breakdowns of the GIC self-insured lives by gender and age were based on the Census Bureau distributions.

Appendix A Endnotes

- ¹ Center for Health Information and Analysis. Estimates of fully insured and self-insured membership by insurance carrier. Accessed 15 November 2020. www.chiamass.gov/enrollment-in-health-insurance/.
- ² Center for Health Information and Analysis. Estimates of fully insured and self-insured membership by insurance carrier. Accessed 15 November 2020. www.chiamass.gov/enrollment-in-health-insurance/.
- ³ Massachusetts Department of Insurance. HMO Group Membership and HMO Individual Membership Accessed 12 November 2020 <https://www.mass.gov/doc/group-members/download> <https://www.mass.gov/doc/individual-members/download>.
- ⁴ Massachusetts Department of Insurance. Membership 2018. Accessed 12 November 2020 <https://www.mass.gov/doc/2018-ipp-medical-plans/download>.
- ⁵ U.S. Census Bureau. Annual Estimates of the Population for the United States, Regions, States, and Puerto Rico: April 1, 2010 to July 1, 2018. Accessed 12 November 2020: <https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk>.
- ⁶ Massachusetts Department of Transportation. Socio-Economic Projections for 2020 Regional Transportation Plans. Accessed 12 November 2020: <https://www.mass.gov/lists/socio-economic-projections-for-2020-regional-transportation-plans>.