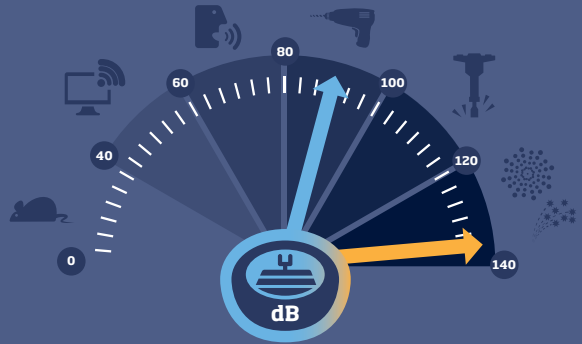


Stadium Noise

An NFL game can get very loud for a number of reasons

The average volume during an NFL game is estimated to be in the mid-90-decibel range (think power tools). Over time, sounds that are louder than 85 decibels can lead to noise-induced hearing loss.



Seattle Seahawks fans set a noise record for the loudest outdoor sports stadium, coming in at **137.6 decibels** (about the range of a fireworks blast).



Stadium Noise Factors:

MetLife Stadium



Number of people attending

82,500 seats
Second largest NFL stadium



Amount of reflective surfaces

217 glass-fronted luxury suite boxes
Four 30' × 118' HD video display boards
360° ribbon board circling the bowl



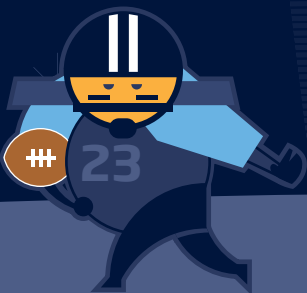
Specific design features: seating, stadium height, and proximity to the field

MetLife's plastic & iron seating is not as loud as the aluminum used at the Seahawks' stadium. The closest spectators sit 46' away from the 50 yard sideline-the shortest distance of any NFL stadium



Stadium structure: open or closed dome, canopies

910'x 740' open dome design.
Two massive overhangs near both end zones.



Noise & Behavior

Noise has been shown to increase anxiety and aggressiveness, and decrease the incidence of helping or considerate behavior.¹

¹ For sources visit Oticonusa.com

Noise On The Field

During an NFL game, how does sound affect players and referees?



Football helmets are designed to protect players' heads, not their hearing. Openings on either side of the helmet allow them to hear crowd noise and calls on the field. When Oticon audiologists measured sound levels with a regulation helmet using KEMAR, an acoustic research mannequin, sound levels were virtually the same with and without the helmet.



Bad Call!

A UK study showed crowd noise influenced referee calls in favor of the home team. It is suspected that noise caused greater uncertainty when determining calls, resulting in fewer penalties called against the home team.²



Huddle Up

Players from schools for the deaf used sign language to communicate plays on the field.

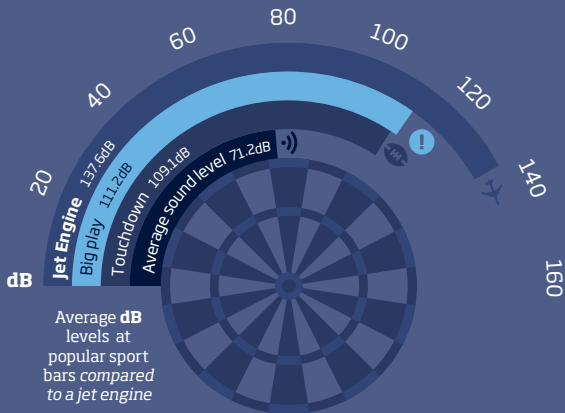
Opposing teams were often able to decipher the hand signals. In 1894, a Gallaudet University QB introduced the huddle as a way to conceal upcoming plays.



² For sources visit Oticonusa.com

Raising the Bar on Noise

When game tickets aren't in the cards, many fans enjoy the camaraderie at their favorite sports bars.



Fan-tastically Noisy

During NFL playoffs, a group of Oticon audiologists fanned out to popular sports bars in playoff cities to measure noise levels. They found that on average, bar noise was in the 70 decibel range, about the noise level of a vacuum cleaner. It ratcheted up to nearly 110 decibels during touchdowns and even higher to 111.2 decibels during big plays.

Everything In Moderation

Some researchers have shown that ingesting alcohol in moderation is a protective agent against hearing loss. However, people who drink 4 or more alcoholic beverages per day have higher odds of having a high frequency hearing loss.³



The Gang's All Here

Sports bars can be very loud places to watch the big game. Fans may be less likely to find the noise bothersome because they're in a social setting according to a study conducted at the University of Minnesota.⁴



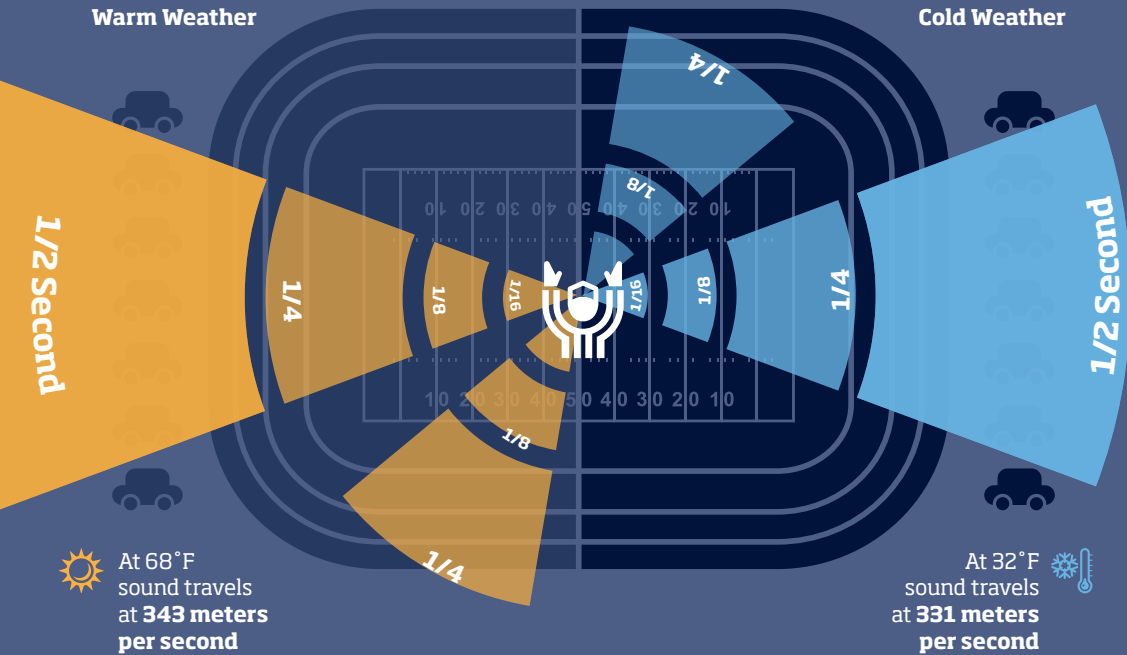
^{3,4} For sources visit Oticonusa.com

Speed of Sound: The Cold Facts

The effects of temperature on sound during a football game



Temperatures can affect how fast sound travels to fans in the stadium. If the weather is colder, there is a slight delay in sound reaching spectators. Average daily low temperature in northern NJ in February is 22°F. And in open dome stadiums, such as MetLife Stadium, wind can add to the chill factor.



 At 68°F sound travels at **343 meters per second**

At 32°F  sound travels at **331 meters per second**



What – No Ear Plugs?!
Ticketholders for the big game will receive “goodie bags” with a seat cushion, muffler, ski gaiters, three pairs of hand- and foot-warmers, lip balm and a package of tissues.

Sound Advice for Game Day

Suiting up for the big game? Here are some practical tips to protect your hearing.

Add a pair of earplugs or earmuffs with a good noise reduction rating to your game day attire. Use both together for increased noise reduction. A package with several pairs of ear plugs cost just a few dollars at your local drug or home store.

Take a break from the noise. Head to the snack bar, take a walk around the stadium or shop for game day souvenirs.



A cap and warm scarf are too porous to offer any protection from stadium noise - but they may protect against frostbite!



It's not uncommon for your ears to ring for a short period after being in a noisy environment. But if the ringing doesn't go away after 3 or more days, get checked out by a hearing care professional!