

## EFFECTS OF NOISE ON PEOPLE: OVERVIEW

The following section was compiled by researchers at Wyle Laboratory

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Within the context of the U.S. Federal noise control regulations and guidance, the term health has been defined, not simply by the absence of disease, but as the total **psychological** and **physiological** well-being of the community. The term **public health** indicates that the common interests of society must be taken into account when evaluating potential noise effects. In other words, noise effects must be related to the long-term, cumulative effects of the population as a whole, not the isolated, occasional impacts on individuals.

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### Background

The reaction of people to a given noise environment is very complex. This is particularly evident when trying to evaluate the potential health effects of exposure to aircraft noise. One reason for this is the intermittent nature and the character of aircraft noise, in which noise levels fluctuate significantly from high to low over time. Another important factor is the complex psychological and physiological reaction of people to the actual noise, as well as their attitude toward the source of the noise. Further complicating the issue, short-term community reaction can be different than the long-term community reaction.

In an effort to better understand people's response to noise, the scientific-medical community has divided the noise effects on people into two general categories of responses. The first of these, psychological effects, refers to behavioral reactions that are indicators of the population's "well-being"—essentially, people's psychological reaction to their noise environment and their reaction to its interference with their various day-to-day activities. Noise can make it hard to hear, concentrate, and sleep, so it may affect work and school performance, for example.

The second type of indicator for human response to noise is physiological effects—essentially, effects on the human body's systems. The primary example of this is noise-induced hearing loss, although other medical health effects such as cardiovascular disease have been postulated by various researchers and communities over the years.

Since the mid-1950s, researchers have been studying the noise metrics and associated noise levels that indicate human response to noise. The following sub-sections discuss the main noise effects to be considered when planning and performing noise analysis for a typical project.