

# Noise and Property Value

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## HISTORY OF STUDY

In recent years much attention has been focused upon environmental factors, particularly in residential areas. In the wake of air traffic noise litigation, increasing concern has followed over automotive vehicle noise, especially along limited access highways. As a result, the Highway Act of 1973 and the Federal Aid Highway Program Manual call for noise abatement measures along certain federally-aided highways where noise exceeds acceptable levels as determined by the Federal Highway Administration.

The Department of Transportation and Development, Office of Highways of the State of Louisiana, felt there was a need for an investigative study to determine the effect, if any, of highway noise on adjacent residential property values. The Office of Highways also desired that a procedure be formulated which could be followed routinely to derive a fair measure of the effect, if any, of noise on property value.

## OVERVIEW OF STUDY

**General Aims**—The purposes of this research as cited in the research plan were to determine, by use of accurate, acceptable practices, the effect, if any, of highway noise on adjacent residential property values; and to provide a set of procedures which could be followed in any situation to give an accurate, fair measure of the effects of noise on property value.

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The findings were to be provided in a format that might be implemented by the Department of Transportation and Development's engineers and appraisers in planning for future highways and in their evaluations of rights-of-way. This format is also useful to the Department's expert witnesses in litigation proceedings.

**Method of Procedure**—The general method used to determine market effect of noise was as follows:

- 1) Preliminary noise level ( $L_{10}$ ) readings were taken in selected areas to determine if noise was above acceptable levels according to the Federal Aid Highway Program Manual.
- 2) Sales and rental data were analyzed to determine if there was a sufficient volume of data available for comparison of properties close to the noise source and away from it, in order to determine market value effects.
- 3) Each potential area was examined to determine whether or not it would meet certain selection criteria agreed upon by the Department of Transportation and the appraisers.
- 4) After the compilation of initial data and inspection of an area or subdivision verified that it would meet all the criteria, a more in-depth noise study was made to determine the noise environment.
- 5) Sales and rentals of similar properties close to and away from the noise source were compared. Where additional information was needed to assure valid comparisons, interviews were conducted with owners of houses away from the noise source to ascertain the condition of the home at the time of the sale or the particular circumstances of the sale. In many cases, the units were also measured to determine square foot living area.

## **METHOD OF COMPARISON—SINGLE FAMILY HOUSES**

The study makes the following comparisons between homes subject to above average noise levels and others not so affected: individual comparison of sales prices of similar homes, yearly resale percentage increases of similar houses, frequency of resales.

Where a subdivision being studied contained virtually identical home models, the sales were separated by models for purposes of comparison. All sales of a matching model for a year before and after a subject sale near the noise source were used for comparison, adjustment for time being made by using the average monthly resale increase figure for that model. Also adjusted was the lot size differential.

Owners of all subject houses (with the exception of a few who could not be contacted) were interviewed to obtain basic information about the house, such as the number of rooms and special features. Homeowners were also questioned regarding the condition of the house at time of sale, renovations or additions, conditions of sale, and any other

pertinent data. If, after time of sale and lot size adjustments, any comparison sale was more than a small percentage above or below the subject sale, a visual field inspection was made. When there was no apparent difference in the homes, the owner of the comparison home was also interviewed.

A different approach was taken in the subdivisions which were developed with homes having substantial variation in design, model, etc. Homes close to and away from the noise source which sold for similar prices at about the same time were contrasted. All homeowners were interviewed with this procedure. All homes were also measured in order to make comparisons on a square foot value basis. This method of comparison was used to avoid making many adjustments to price for individual differences which could affect the objectivity of the study.

Where there was more than one sale of a subject house over the time period studied, the resale increase of the subject was compared with those of matching or similar homes away from the noise source.

Frequency of resales close to the noise source and away from it was compared. The number of sales on a street was divided by the number of developed lots on that street to determine the rate of turnover in homes. The rates of turnover for the noise-affected and non-affected areas were then compared. Any transfers from a succession (estate) were excluded since such a transfer is not a voluntary sale by an individual. Transfers to and from a corporate entity, such as a bank or transfer company, were counted only as one transfer, since the corporation is merely a conduit to transfer the home to another purchaser.

## **METHOD OF COMPARISON—APARTMENTS**

If there is any financial loss in apartments due to high noise level, it must be reflected in either the unit rentals or occupancy of the apartments near the noise source, as compared with similar units in the complex away from the noise source. Therefore, the study compares the apartments close to the noise source with those in the same complex away from the noise as to the rent level of comparative units, their occupancy level, and requests of tenants in noise oriented apartments to move back to units not having the noise.

Because of the scarcity of apartment units in New Orleans and Baton Rouge, many of the apartment complexes which front on either the Interstate Highway or on frontage roads adjacent thereto had such a high occupancy rate that they could only be surveyed from the standpoint of rent levels and move-back requests. Only one unit, Lake Kenilworth, had a sufficient vacancy rate to study in depth the occupancy rate of the units near the noise level as compared with other apartments in the same complex.

The evidence of the units with high occupancy levels is still considered valid from the standpoint of rent levels, and particularly move-back requests. If the apartment occupants were sufficiently dissatisfied, they would request that they be allowed to move to units away from the noise source as they became vacant.

Apartment units were sought which had a high noise level on a local arterial collector road in New Orleans and in Baton Rouge. None were found which fit the criteria. However, two units were found, which backed into the Interstate Highway with frontage on Veterans Boulevard, with high noise levels from this local road.

## Conclusions

### GARDEN APARTMENTS

An objective study of the effect of highway noise on the value of apartments is not a simple task.

- 1) The noise levels of many complexes on expressways frequently are not sufficient to qualify as above acceptable levels determined by the Federal Highway Administration.
- 2) Many apartment units, in times of apartment undersupply in a given area, have very high occupancy levels making noise-related vacancy research impossible.
- 3) Owners and managers at times will not cooperate by furnishing rent rolls and other information needed for the study.
- 4) Owner and manager prejudice can influence the results in a particular apartment complex.
- 5) The highway gives prominence and exposure which assist the owners and managers in renting the apartments, at times above levels obtained for similar units in remote locations. Further, these attributes might benefit the occupancy levels in the complex. Yet, at the same time, those units near the noise source can command less rent or have less occupancy.

While no apartment complexes in this study were found on major arterial collectors which were not also on interstate highways, three were found which had frontage on both (two in New Orleans area and one in Baton Rouge). All three had no adverse effect as a result of the noise levels of either the Interstate or local road. Rent levels for similar units were the same for noise oriented and for interior units. There was only one complaint from the local road highway noise study and this was from a party who complained about the noise of the air conditioner. There were no requests for move-backs. There were no vacancy problems in the noise oriented units; however, this is not significant since the complexes were close to 100% occupied.

One apartment complex in Baton Rouge and nine in the New Orleans area fronted on interstate highways and were researched generally;

however, detailed studies were not made because all had unusually high occupancy rates.

- 1) The rent levels for noise-oriented units were the same in all cases as with similar units away from the noise.
- 2) In all these units, there was but one request to move and this was motivated by a desire to get into a cheaper, one-bedroom unit from a two-bedroom unit. This is the only move-back request known.
- 3) There were no known move-outs because of the noise.
- 4) Older people apparently prefer the front apartments even with the noise because of security and the fact that they do not have to drive their cars to the rear of the complex.
- 5) Because of the generally high occupancy rates, there were no problems with vacancies in the noise related units.
- 6) The view from the front (living room) of the apartment was apparently more important than the noise problem.
- 7) Proximity to recreational facilities was more important to adults than the noise problem.
- 8) Being removed from the young children's playground was more important than the highway noise.

Lake Kenilworth apartment complex was studied in detail because it had less than 100% occupancy, previously did have a small rent concession for some units on the highway, and owner cooperation was obtained.

- 1) Some of the units facing the highway had a 6.85% rent concession which was eliminated recently without any increase in vacancies over a short time period. The rental obtained for the noise oriented units was the same previously as for similar interior units excepting that the interior units did not have an outside balcony. Interior units with balconies were charged \$17 per month more.
- 2) The occupancy rate for the noise oriented units was high as compared with similar interior units facing concrete parking area, an open canal, and a major street (not the Interstate). The units facing I-10 did have slightly more vacancies than units near the shopping center, interior lake, or interior courtyards. It was concluded that proximity to the noise did not contribute to vacancy ratio of the front units since the occupancy rate on these units was about at the overall average of the complex.
- 3) Points 2, 3, 4, 6, 7 and 9 in the study of the nine New Orleans area units were applicable to Lake Kenilworth Apartments.
- 4) Considering the prominence and exposure of Lake Kenilworth Apartments, it was concluded that the benefits of the highway more than overcame the prior loss of \$17 per unit for some of the noise oriented apartments. Furthermore, occupancy and recent experience with no rent concession tend to prove that the \$17 reduction was due to owner's prejudice. All the other units on I-10 East had no rent concessions.

In light of the fact that the noise levels of all these complexes were above recommended maximum levels, and the findings of the study, it is concluded that the highway noise in this area does not have an adverse effect on rental income or market value.

## **SINGLE FAMILY RESIDENTIAL**

Selection of suitable subdivisions for testing the effect of highway noise is important if any objective study is to be undertaken. Having a sufficient amount of relevant sales both near and away from the highway at about the same time is mandatory. Those data which require the least amount of adjustment for differences (both physical and economic) give results with the least possibility of error.

**Willowdale Subdivision**—This is an ideal subdivision to ascertain if high noise level of an interstate highway causes a diminution in value: because of the age of houses (about 15 years), because of the presence of similar models backing into the highway and in the interior, and because of numerous sales both on and off the highway. While 11 of the sales on the highway tend to indicate that the houses in the interior sell for 5.43% more than the houses on the highway, there were seven other sales on the highway which indicate that the interior houses were, in fact, worth 6.92% less on the average. This is after adjustment for time and lot size. Therefore, the sales data do not appear to be sufficient evidence to indicate that there is an adverse effect on the property values because of noise.

The houses backing into the highway over the last six years resold at a frequency rate of 1.99% less than the overall average of resales in the subdivision, which is no indication of dissatisfaction to a point of selling frequently.

The overall percentage of value increase per annum is lower for houses backing into the Interstate by 1.61% per annum according to the criteria of the study; that is, increases over 12.5% annually and under 2.4% were eliminated. Interestingly, two resales were eliminated which would run the average to a plus 1.7% for the houses on the highway, one at 31% annual increase, the other at 13.4%. Since there were only eight houses abutting the highway which resold over the six-year period, this result is not considered significant.

**Vineland Subdivision**—This is an area of new houses next to Willowdale which face the frontage road alongside the Interstate (therefore, there is noise and view diminution potential). With a limited number of comparables, the sales indicate that the prices obtained, adjusted for price only, favor the interior houses by 2.83%. However, most of this is due to the narrower lots of the houses on the highway.

It was obvious that the houses in this small subdivision had exceptionally high resale values. It is interesting to note that the five sales of houses facing the Interstate frontage road were at an average annual

increase of 3.18% higher than the five sales off the highway. Resales on the frontage road were at an average increase of 16.39% per annum and off the frontage road at 13.21% per annum.

**Terrytown**—This study of new, middle class housing shows that on this busy major arterial collector, the deviation is so small as to be insignificant. This tends to indicate a lack of buyer resistance to the parkway with its traffic and noise. There is only one resale of these relatively new houses on Terry Parkway and it was at a 13.63% annual rate of increase which compares favorably to the resales of four interior houses at an average annual increase of 12.79%. There is no potential for an adequate sales comparison or a frequency of resale comparison because the houses are so new.

**Holiday Drive**—This study of houses on a busy major arterial collector tends to indicate that the houses in the interior sell for from 1.5% to 2.1% more than the houses on Holiday Drive. This is the result after adjustment for the larger lots on Holiday Drive, for the time of the sales and, to a limited extent, for condition. Because all lots on Holiday Drive were larger than the interior house lots, such a small deviation could easily have come from the lot or time adjustment. Furthermore, it is felt that there is at least this percentage of imperfection in the single family house market.

The resale percentage increase averages slightly higher for the interior houses (.24%) than for the four houses on Holiday Drive. However, it should be pointed out that two of the four sales were eliminated because they were too high (16.77% and 14.35% annual). The houses in this entire subdivision had relatively high resale values. The frequency of sales for Holiday Drive is 10.83% per annum whereas the overall subdivision rate is 11.4%. This is over a six-year period.

**Sherwood Forest Boulevard**—This heavily traveled street in Baton Rouge with custom homes has a high noise level of 72 dBA, with approximately the same quantity of traffic as Holiday Drive; however, the eight models studied over a three-year period do not show any adverse influence from the noise. The noise levels on Holiday Drive in Algiers (New Orleans) approach 76 dBA because the speed limit of 35 mph is not strictly enforced as the same speed limit is on Sherwood Forest Boulevard.

The comparison of sales on Sherwood Forest Boulevard and sales of houses off the boulevard show very little difference in price per square foot. Of the eight houses studied, it appears that five houses on Sherwood Forest Boulevard sold for 6.5% more than the interior houses before adjustment for the higher price per square foot which the smaller houses should bring. Three houses on Sherwood Forest Boulevard apparently sold for 3.0% less than their interior comparables. Both of these average variances are greatly reduced by the fact that almost consistently smaller houses will sell at a relatively higher square footage price. Therefore, there appears to be no appreciable variance.

Resale frequency is so small, both for Sherwood Forest Boulevard and the interior houses, that this is not considered a good test in this subdivision. Percentage increases are likewise considered not reliable because of the small size of the sample.

**Slidell Country Club Estates**—A different method of comparison was used in this super-suburban subdivision. Sales of houses which backed into I-12 were noted, and houses which sold for a similar price away from I-12 were studied. A standard of overall price per square foot was used, and it showed that the houses which backed into I-12 actually sold for an average of \$28.45 per square foot, while the average of the houses in the interior sold for \$26.64, or 6.8% less. This is about par, since some of the houses backing into I-12 were somewhat smaller than their comparables. The average resale price increase was 11.1% per annum for houses backing into I-12, while that for the interior was 9.8%, or 12% less. The frequency of resales of the houses backing into I-12 was just about the same as the average of the houses in the balance of the subdivision for the six-year period.

## SUMMARY

The abundance of evidence is that the houses which back into the Interstate Highway in Willowdale Subdivision, Vineland Street and Slidell Country Club Estates neither suffer a price diminution as measured by sales comparisons and resale price increases, nor do they sell any more frequently than houses in the interior.

There is some evidence that some of the houses on the Interstate sell for less if the person taking the sample selects only those houses in this category. However, on an overall basis, those differences in prices are so small as to be inconclusive. For instance, in Willowdale Subdivision on Interstate 10, there were samples which indicated both ways, and the percentage price increases were very close. On Vineland Street, which faces a frontage road alongside I-10, the values were 2.83% lower for those facing the Interstate; however, the lots of these houses were smaller. In the quiet super-suburban community of Slidell, the houses in the Country Club Estates showed no appreciable difference as between those backing into I-12 and those in the interior. For homes on major arterial collectors, the new homes in Terrytown and those in Sherwood Forest in Baton Rouge showed no difference. Holiday Drive in Algiers (New Orleans) did show from 1.4% to 2.5% lesser value than the interior houses; however, the imperfections of the residential single family house market as well as the adjustments taken for the larger lots on Holiday Drive and the time adjustments, could account for this. If there is a true effect on market value on Holiday Drive, at least a part of this is attributed to the fact that the speed limits are not strictly enforced in this residential suburb of New Orleans.