

It is a commonly held belief that railroad tracks negatively affect the value of nearby residential properties because of the nuisance trains can be. This belief is understandable in the case of rail freight traffic as it has little immediate benefit to the people living near the tracks. Alternately, if residential land is within a certain proximity to a point of rail access for commuting purposes, the value of the land tends to increase. The increased valuation of land arising from its proximity to commuter rail lines is often an important ingredient in encouraging what is sometimes termed "transit oriented development".

Because of the anticipated relationship between railroad tracks and residential property values, and the expectation that additional freight use would be generated along Springfield's 3rd Street rail corridor due to the double-tracking that would be part of any high speed rail project, the Springfield-Sangamon County Regional Planning Commission (SSCRPC) thought it important to determine how increased use of Springfield's 3rd Street rail corridor for freight might generally affect surrounding property values. Since the 10th Street rail corridor has been suggested as an alternative, our initial report was updated to provide additional and more complete information concerning this area as well.

The SSCRPC found that:

- The 3rd Street rail corridor contains 20.4% more residential structures within 250 ft of the rail line than does the 10th Street corridor. Residential uses along the 10th Street corridor increases as one moves further away from the rail line.
- Research indicates that additional freight rail trips result in a measurable decline in residential property values, representing a negative externality.
- As a comparative index, residential properties within 250 ft of the 3rd Street corridor would lose \$1,213,626.20 in total property value for every 10 freight trips added to that line.
- The loss in property value along the 10th Street corridor is less than would be expected along the 3rd Street corridor due to the fewer number of homes being affected and their distance from the rail line.
- A loss in property value yields a concurrent loss in property tax revenue, with a greater loss occurring from additional use of the 3rd Street corridor when compared to the 10th Street corridor. The loss is not large but is palpable.

From a planning perspective these findings are considered to be important, because when selecting among alternatives those alternatives should be considered that have the fewest negative effects for the largest number of people. Additional cost-benefit analysis would be helpful.

The Residential Nature of the Corridors

Springfield’s 3rd Street rail corridor is different from the other two rail corridors that run north-to-south through the city in that it is proximate to a somewhat denser residential area. Looking just at the 4.38 mile segment that runs from the rail junction near Percy Ave., on the north, to the Iles junction, on the south, the 3rd Street rail corridor passes through eight recognized residential neighborhoods that have filed with the SSCRPC: Central City, Downtown Springfield, Enos Park, Grand Central, Lincoln Park, Near South, Oak Ridge, and Old Aristocracy Hill. These eight neighborhoods include 428 houses within 250 ft. of the tracks and 655 that are within 500 ft of the tracks. In addition, 198 houses not associated with a recognized neighborhood association are within 250 ft. of the tracks and 418 are within 500 ft. This means there are 1073 residences within 500 ft. of the 3rd Street rail line (see Table 1).

Table 1: Houses Within 250 and 500 Feet of 3rd Street Rail Line

Houses by Neighborhood	Houses Within 250 ft.	Houses Within 251-500 ft.	Total Number of Houses within 500 Ft.
Enos Park	121	71	192
Near South	131	95	226
Old Aristocracy Hill	92	11	103
Grand Central	41	7	48
Lincoln Park	41	35	76
Central City	0	3	3
Oak Ridge	0	4	4
Downtown Springfield	2	1	3
Non-Associated Homes	198	220	418
Total	626	447	1073

Homes located within the boundaries of the eight associations account for 68.4% of all homes within 250 ft. of the tracks, and 61% of those located within 500 ft. Homes that are not currently within a recognized neighborhood association area make up the remaining 418 homes, or 39% of the homes within 500 ft. of the rail line. The SSCRPC staff conducted a survey of the homes within 500 ft. of the line and found that the vast majority are over 1,700 square feet in size. The only significant concentration of smaller homes is located to the extreme southwest of the study area.

The 10th Street corridor from Sangamon Avenue to Iles, affects seven residential neighborhoods that have filed with the SSCRPC: Eastside, Enos Park, Grand

Improvement, Harvard Park, Iles Park, Old Aristocracy Hill, and Pillsbury (see Table 2, below). These seven neighborhoods have 189 houses within 250 ft. of the rail line and 387 within 500 ft. In addition, there are 331 homes not associated with a recognized neighborhood within 250 ft of the track and 588 within 500 ft.

Table 2: Houses Within 250 and 500 Feet of 10th Street Rail Line

Houses by Neighborhood	Houses Within 250 ft.	Houses Within 251-500 ft.	Total Number of Houses within 500 Ft.
Harvard Park	17	36	53
Grand Improvement	0	1	1
Eastside	0	21	21
Iles Park	13	18	31
Old Aristocracy Hill	0	10	10
Pillsbury	159	95	254
Enos Park	0	17	17
Non-Associated Homes	331	257	588
Totals:	520	455	975

Several items are of note:

- Two of the neighborhoods (Enos Park and Old Aristocracy Hill) affected by the 3rd Street corridor would also be affected by the 10th Street one, though not within 250 ft.
- There are more homes, closer to the lines, affected by the 3rd Street corridor than the 10th. Aside from homes in the Pillsbury area, the impact on homes within 250 ft. of the 10th Street corridor is less than on the 3rd Street one: 626 vs. 520.
- The number of homes affected by the 10th Street corridor is significantly affected by the homes in the Pillsbury area. About 31% of the homes within 250 ft. of the 10th Street line are within this area, and about 26% of the total. The next largest is Harvard Park where only 53 homes are within 500 feet (only 17 within 250 ft.), making up 5.4% of the total homes affected.
- Most of the homes, 60%, affected along the 10th Street corridor are not within recognized neighborhood areas, compared to 39% along the 3rd Street line.

Determining Property Value Impact

The approach that the SSCRPC took in determining the approximate effect that additional freight railroad traffic would have on residential property values was drawn from the work of Simons and Jaouhari.¹ Their study found that proximity to freight rail

¹ Simons, R. A., and Jaouhari, A. E. (2004). The effect of freight railroad tracks and train activity on residential property values. *The Appraisal Journal*, Summer: pp. 223-233,

lines affects the value of a home based on many factors, including home size, age of the home, and distance from the tracks. Because the issue at hand is not the existence of rail but rather the increased intensity at which the existing rail is to be used, the most important factor becomes the number of new trains passing each home per day, and how the change affects home value. Simons and Jaouhari calculated each housing variable's influence using regression analysis, making it possible to determine how much each variable affected the price of a home. This estimate is presented in Table 3, below, and provides the basis for our analysis.

Table 3: Value Impact and Confidence Levels from Simons and Jaouhari Study

Per Freight Train Property Value Loss Based on Distance from Track and Size of Home	Distance in Feet From Track 250 or Less	Distance in Feet From Track 251-500	Distance in Feet From Track 501 or More
Size of Home < 1250 sf	Loss per Freight Trip: \$193.87 Confidence: .02	Loss per Freight Trip: \$84.92 Confidence: .05	Loss per Freight Trip: \$94.17 Confidence: <.01
Size of Home 1251 – 1700 sf	Loss per Freight Trip: \$262.01 Confidence: .04	Loss per Freight Trip: \$107.15 Confidence: .15	Loss per Freight Trip: \$71.87 Confidence: .15
Size of Home > 1700 sf	Loss per Freight Trip: \$264.38 Confidence: .14	Gain per Freight Trip: \$4.46 Confidence: .96	Gain per Freight Trip: \$0.82 Confidence: .99

Please Note: Shaded cells indicated findings at less than .05 confidence level.

Their study used distance from the tracks and home size in square feet to classify the dollar value loss that could be attributed to each additional freight trip. Table 3 indicates the dollar value found by Simons and Jaouhari and the confidence level for each. As the table shows, confidence levels declined as homes increased in size and were located further from the tracks. The level of certainty adopted by SSCRPC for this analysis is .05, which would be acceptable for most studies of this kind. For this reason our analysis only considered homes within 250 ft of the track and assumed that all of the homes are less than 1,250 sq. ft., as this would be the most conservative approach and well within the acceptable level of confidence. This was initially calculated against the 626 homes found to be within 250 ft of the 3rd Street tracks.

While Simons and Jaouhari's dollar value results are not specific to property transactions in Springfield and should not be considered a measure of true dollar loss or gain, they do provide a basis for analysis. We believe that while it can be argued that the specific dollar value might change by locale, it still represents an index that is useful for comparison purposes. That is, rather than viewing the loss per freight trip in pure dollar terms, one might think of it as an index or ratio of loss or gain.

Results

Table 4, below, calculates the loss in property value for homes within 250 ft. of the 3rd Street rail line assuming that the more conservative assessment for the square footage of the homes (< 1250 sf.) is used.

The results of the SSCRPC's estimate is that the 626 residential properties within 250 ft. of the rail line will collectively lose approximately \$1.2 million in value for every 10 freight trains that pass by. For an individual property owner this means a comparative loss of \$1,938.70 for every 10 trains. Three recognized neighborhoods would accrue no loss as they have no houses within the 250 ft. limit of this analysis, though as Table 1 indicates they may have houses within the 251-500 ft. area, which Simons and Jaouhari found to be affected at a statistically significant level.

Table 4: Estimate of Property Value Loss in Increments of 10 Trains on 3rd St Corridor

Houses by Neighborhood	Houses Within 250 ft.	Loss of Value 10 Additional Freight Trains	Loss of Value 20 Additional Freight Trains	Loss of Value 30 Additional Freight Trains
Enos Park	121	-\$234,582.70	-\$469,165.40	-\$703,748.10
Near South	131	-\$253,969.70	-\$507,939.40	-\$761,909.10
Old Aristocracy Hill	92	-\$178,360.40	-\$356,720.80	-\$535,081.20
Grand Central	41	-\$79,486.70	-\$158,973.40	-\$238,460.10
Lincoln Park	41	-\$79,486.70	-\$158,973.40	-\$238,460.10
Central City	0	\$0.00	\$0.00	\$0.00
Oak Ridge	0	\$0.00	\$0.00	\$0.00
Downtown Springfield	2	-\$3,877.40	-\$7,754.80	-\$11,632.20
Non-Associated	198	-\$383,862.60	-\$767,725.20	-\$1,151,587.80
Totals	626	-\$1,213,626.20	-\$2,427,252.40	-\$3,640,878.60

Please Note: Loss in Value = \$193.87 x No. of Homes x No. of Freight Trips

Realize, first, that the impacts indicated above are based upon freight trips rather than passenger. This is because the effects calculated by Simons and Jaouhari were based upon freights, and passenger trains may result in the positive externalities noted for commuter rail lines at the beginning of this paper. Also it only relates to additional freight trains. It is assumed that existing trains have already been absorbed in the valuation of the properties.

Table 5: Estimate of Property Value Loss on 3rd vs. 10th Street Corridors

Corridor Comparisons	Houses Within 250 ft.	Loss of Value 10 Additional Freight Trains	Loss of Value 20 Additional Freight Trains	Loss of Value 30 Additional Freight Trains
3rd Street Corridor	626	\$1,213,626.20	\$2,427,252.40	\$3,640,878.60
10th Street Corridor	520	\$1,008,124.00	\$2,016,248.00	\$3,024,372.00
Value Difference	106	\$205,502.20	\$411,004.40	\$616,506.60

Please Note: Loss in Value = \$193.87 x No. of Homes x No. of Freight Trips

For comparison purposes the SSCRPC considered the number of homes within 250 ft. of Springfield's 10th Street rail corridor from the junctions noted above. Compared to the

626 homes along the 3rd Street corridor, there were only 520 homes along the 10th Street one. This represents about a 17% reduction in the number of homes. Table 5, above, provides a comparison of the impact on the two corridors using Simons and Jaouhari findings.

Overall, use of the 3rd Street corridor for additional rail traffic would result in a comparative loss in residential property values of about \$205,000 for each additional 10 freight trips when compared to the 10th Street corridor loss.

Since property tax is based upon assessed property value, it is reasonable to consider the effect any reduction in property value would have on property tax revenue. This would represent a negative externality regardless of the rail corridor put to use. Of course, the fewer the properties affected, the less the decline in tax revenue and the lower the negative externality.

Table 6: Estimate of Property Tax Loss for 3rd vs. 10th Street Corridors for Houses Within 250 Ft.

Corridor Comparisons	Loss of Value 10 Additional Freight Trains	5-Year Tax Loss	10-Year Tax Loss
3rd Street Corridor Value Loss	\$1,213,626.20		
Estimated Total Loss in Assessed Value	-\$404,542.07		
District 186 Annual Loss (rate 4.5638%)	-\$18,462.49	-\$92,312.45	\$184,624.91
Springfield (rate 1.7396%)	-\$7,037.41	-\$35,187.07	-\$70,374.14
Sangamon (rate 0.6901%)	-\$2,791.74	-\$13,958.72	-\$27,917.45
Total Loss to 3 Taxing Bodies	-\$28,291.65	\$141,458.25	\$282,916.49
10th Street Corridor Value Loss	\$1,008,124.00		
Estimated Total Loss in Assessed Value	-\$336,041.33		
District 186 Annual Loss (rate 4.5638%)	-\$15,336.25	-\$76,681.27	\$153,362.54
Springfield (rate 1.7396%)	-\$5,845.78	-\$29,228.88	-\$58,457.75
Sangamon (rate 0.6901%)	-\$2,319.02	-\$11,595.11	-\$23,190.21
Total Loss to 3 Taxing Bodies	-\$23,501.05	\$117,505.25	\$235,010.51
Additional Tax Loss Accruing From 3rd Street Rail Use	-\$4,790.60	-\$23,952.99	-\$47,905.99
Additional % Tax Loss	20.38%	20.38%	20.38%

Table 6, above, estimates comparative property tax losses for the three largest local taxing bodies expected to be affected by a decline in residential property value:

Springfield School District 186, the City of Springfield and Sangamon County. The estimate is based upon an increase of only 10 freight trips per day. Increasing the number of trips would increase the estimated tax revenue loss.

The property tax losses estimated above are not monumental, but they are palpable. As might be expected, use of the 3rd Street corridor generates more of a tax loss to the three taxing bodies than does the use of the 10th Street corridor. Total annual tax loss for the three jurisdictions from homes within 250 Ft. of the 3rd Street corridor amounts to about \$28,291.65, with five and 10 year losses at about \$141,000 and \$282,000 respectively. Of course an increase in freight train traffic would simply multiply these amounts. For example, an increase of 20 freight trains per day would result in about a \$56,000 annual loss, a \$280,000 5-year loss, and a \$560,000 10-year loss.

While use of the 10th Street corridor would also generate a property tax loss, it would be less because of the smaller number of residences within 250 ft. of that line. The difference is about \$4,800 less on an annual basis per 10 freights, \$24,000 less on a five year basis, and \$48,000 over 10-years. This represents a differential of 20.38%. Or considered from a different perspective, the property value loss on the 10th Street corridor represents only 79.62% of the property value loss on the 3rd Street corridor.

Again, the figures above for property value loss and property tax revenue loss should only be considered as an index for comparison purposes as the Springfield market may differ in dollar values from the market studied by Simons and Jaouhari.

Conclusion

To the extent that research indicates that additional freight trips have an effect on property values (and that research is noted by Simons and Jaouhari), we find that it will have an impact on properties near both the 3rd and 10th Street rail corridors. However, the impact will be smaller on the 10th Street corridor due to the smaller number of residences nearby.

For an individual property owner living near either rail line, our making a distinction between the two based on number of houses within 250 ft. may seem arbitrary if not unimportant. But as a planning body the SSCRPC must take into account any externalities and their anticipated magnitude.

In the consideration of whether additional freight might be placed on either the 3rd Street corridor or the 10th Street one, our initial analysis indicates that additional use of the 10th Street corridor would have less negative impact on both residential property values and tax revenues than would use of the 3rd Street corridor. Additional cost-benefit analysis that considers externalities associated with various options would be helpful.

Initial Research and Analysis Conducted By: Dan Walker, SSCRPC Planning Intern, Ball State University.
Additional Data Collected By: Chris Benson, SSCRPC Planning Intern, University of Illinois-Springfield.
Additional Analysis: E. Norman Sims, Executive Director, SSCRPC; Jeff Fulgenzi, Principal Planner for Comprehensive and Strategic Planning, SSCRPC.

The Springfield-Sangamon County Regional Planning Commission (SCRPC) serves as the joint planning body for Sangamon County and the City of Springfield, as well as the Metropolitan Planning Organization for transportation planning in the region.

The Commission has 17 members including representatives from the Sangamon County Board, Springfield City Council, special units of government, and six appointed citizens from the city and county. The Executive Director is appointed by the Executive Board of the Commission.

The Commission works with other public and semi-public agencies throughout the area to promote orderly growth and redevelopment, and assists other Sangamon County communities with their planning needs. Through its professional staff, the SSCRPC provides overall planning services related to land use, housing, recreation, transportation, economics, environment, and special projects. It also houses the Sangamon County Department of Zoning and Building Safety which oversees zoning, building permits and code, and liquor licensing for the County.

The Commission prepares area-wide planning documents and assists the County, cities, and villages, as well as special districts, with planning activities. The staff reviews all proposed subdivisions and makes recommendations on all Springfield and Sangamon County zoning and variance requests. The agency serves as the county's Plat Officer, Floodplain Administrator, Census coordinator, and local A-95 review clearinghouse to process and review all federally funded applications for the county. The agency also maintains existing base maps, census tract maps, township and zoning maps and the road name map for the county.

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