An Economic Impact Analysis of a Reduction in the Sales Tax on Manufactured Homes – Final Report

Contracted by:

Jim Ayotte

Executive Director

Florida Manufactured Housing Association

By:

The Center for Economic Forecasting and Analyses
Florida State University

Morgan Holland, MS.,ABD

Julie Harrington, Ph.D.

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Executive Summary

The Florida Manufactured Housing Association, Inc. (FMHA) is a non-profit organization that represents the interests of builders and retailers of manufactured homes in Florida. The Florida State legislature is considering a bill that will change the state sales tax rate on new manufactured homes from 6 percent to 3 percent and FMHA has contracted with the Florida State University Center for Economic Forecasting and Analysis (CEFA) to provide economic analysis of this change. The research team estimates that after the tax reduction, an additional 39,573 families will be able to afford a new manufactured home in Florida. The tax change is expected to generate significant economic activity in the manufactured housing industry as well as the Florida economy as a whole. The research team estimates that an additional 1,844 homes will be sold following the tax change, generating approximately $185,075,363 in economic activity, 2,178 new jobs, and $69,864,152 in wages.

ES 1. Summary of Findings

Summary of Estimations	
Potential New Homeowners	39,573
New Jobs Created	2,178
New Economic Output	$ 185,075,363
New Wages Generated	$ 69,864,152
New Local and State Tax Revenues	$ 13,746,187

The purpose of the tax change is to bring sales taxes on manufactured homes into parity with sales taxes on site-built homes. Site-built homes are only assessed sales tax on the materials used in construction, while manufactured homes are assessed sales tax on the full purchase price of the home, which includes material and labor costs and profit. Material costs are approximately 40 percent of the cost of constructing a home. Purchasers of manufactured homes are currently paying much more in sales tax than purchasers of site-built homes. Bringing sales taxes into parity with site-built homes should make manufactured homes more affordable to low-income families, bringing homeownership within reach of new individuals. In addition, increased demand and sales of manufactured homes should offset some of the lost sales tax revenue from the decrease in sales tax.

The research team at CEFA conducted several analyses to determine the impact of changing the sales tax. First, to provide context to this study, the team summarized how manufactured homes have been used as affordable housing since their inception and discussed barriers that prevent manufactured homes from being used as affordable housing today. Next, the team used difference-in-differences (DiD) methodology to determine how much of the benefits of the tax change will go to buyers, and how much to retailers and manufacturers, by examining a

similar tax change in the neighboring state of Georgia. Second, the team conducted a priced-out analysis to determine how many more families in Florida will be able to afford a manufactured home after the tax change. Finally, the team used a vector autoregression (VAR) and an economic impact analysis to predict how the tax change will affect economic activity in Florida.

Literature Review and Background Research

To place this study in its proper context, this section presents background research and literature related to the taxation of manufactured housing. First, a brief history of manufactured homes is presented, with a focus on their use as affordable housing. Next, the research team presents financial barriers to using manufactured housing as affordable housing, including the issue of primary concern, sales tax parity. Finally, we discuss other studies that use similar methodologies to determine the impact of changes in tax policy.

A Brief History of Manufactured Housing as Affordable Housing

Manufactured housing has a surprisingly long history, tracing its origin from the demands of the growing British Empire in the 1830's. "Iron homes" made of corrugated iron were constructed in factories in the industrial cities of Britain and shipped to the far reaches of the Empire to serve as housing for local British functionaries and soldiers. Originally, these houses were imported into the U. S. from Britain, but local manufacturers quickly took over production. Early American prefabricated houses – still constructed primarily out of iron - were produced in factories in Eastern states like New York and shipped to California to be sold to prospectors and new residents of boom towns during the gold rushes. While these early examples of pre-built housing would not be classified as manufactured homes by today's standards as they lacked a chassis and wheels, they filled the same need for affordability and ease of placement that manufactured homes fill today (Sullivan, 2018).

The industry saw a shift in focus after the invention of the automobile toward fulfilling a new need: mobility. In 1910, the Touring Landau was introduced, a camper trailer on a chassis that could be towed as a trailer. Despite this early introduction, the use of camper trailers would not become widespread until the 1930's, when they were seen as a low-cost alternative to traditional travel for families suffering from the financial hardships of the 1930's (Adkins, 2019). Municipalities and landowners capitalized on this trend by building parks where camper trailers could stay, usually for a limited time. Alongside the use of trailers in recreation came their use as low-cost housing. While most displaced and migrant workers constructed their own "jalopies" to follow harvests and other labor opportunities, many also used camper trailers. In

1937, an estimated 10% of camper trailers were being used as permanent housing (Sullivan, 2018).

During WWII, the demand for wartime housing of soldiers, their families, and support staff increased sharply. At the same time, sales of camper trailers to the public were outlawed due to rationing. In response, the camper trailer industry pivoted to making low-cost housing for the war effort (Aron, 2018). Previously, the manufactured housing industry attempted to downplay and discourage the use of camper trailers as permanent housing because of the stigma of the squatters' camps. During WWII, manufacturers switched tactics to *promoting* the use of camper trailers as permanent housing (Sullivan, 2018). Also responding to the need for inexpensive housing, lawmakers and regulators relaxed the mobility requirements of trailers intended as permanent housing, creating a legal distinction between a *mobile home* and a *camper trailer* (Sullivan, 2018). While trailers and RVs continued to be produced after the war with mobility as one of their primary requirements, mobile homes began to resemble site-built homes, becoming larger and more difficult to move once placed in a location (Prahl, 1999).

Sales of mobile homes boomed again after WWII along with the overall housing market as veterans returned home and sought affordable housing. The quality of models produced after WWII was significantly better than the spartan wartime trailers produced to military standards (Adkins, 2019). By 1955, sales had levelled off as the housing shortages of the previous decade cleared up (Sullivan, 2018). However, in that same year, regulatory changes ensued that pushed factory-built housing into the prototype that continues to this day.

In 1955, housing manufacturers successfully lobbied for an increase in the width regulations on the transportation of mobile homes. This resulted in the final break with the camper trailer industry, as newer models of mobile homes were too large to move with a personal vehicle. The new 10-foot-wide homes now required specialized permits and transportation. Successive changes in legislation over the years led to 12-foot-wide and, eventually, 14 and 16-foot-wide homes (Sullivan, 2018).

The Nixon administration saw a major increase in the use of mobile homes as affordable housing. During this time, the U.S. Federal Government cut back on the provision of affordable housing, relegating this responsibility to states and private entities. In response, mobile home parks opened in large numbers across the country, being one of the only unsubsidized alternatives to government housing programs. Partly in response to this change in policy, approximately one in three new home starts in 1970 were mobile homes, and nine out of ten new homes under $15,000 were mobile homes (Sullivan, 2018).

The federal housing policies instituted by Nixon have largely continued to this day. Through the federalization of mobile home housing standards in 1974, the official change in name to "manufactured homes" in 1976, and every subsequent update to the regulations regarding

manufactured homes, they continue to be an essential source of affordable housing, both through land-lease arrangements and placement on an owner's property (Sullivan, 2018).

Barriers to the Use of Manufactured Homes as Affordable Housing

Despite being a large share of the stock of affordable housing in the United States, legal and logistical barriers remain in place that limit the use of manufactured homes as affordable housing. Many of these barriers come from social stigma around living in manufactured housing, but others arise from ignorance on the part of policymakers about the nature of manufactured homes. Because this study focuses on changing policies that will affect the price of manufactured housing, we focus on financial barriers in this section. For a complete review of manufactured homes as affordable housing, see Durst & Sullivan (2019).

A major legal holdover from the early days of "trailers" or "mobile homes" is the classification of manufactured homes as personal property, rather than real property. In Florida, manufactured homes are typically sold initially as personal property. There is a legal process by which owners can convert their homes to real property, many owners are legally unable to do so, while others choose not to.

In 2019, 37 percent of loans were issued to owners in a land-lease agreement. Owners who enter into land-lease agreements own their homes, but not the land on which the home sits. Instead, this land is leased through a contract with monthly payments. Monthly rental payments can make up a significant portion of the cost of owning a manufactured home, averaging $580 per month in 2021.[1] In addition, traditional mortgages are unavailable for owners in a land-lease agreement because such homes cannot be converted to real property.

61 percent of manufactured home loans in 2019 were for homes on private property.[2] Despite having the option to convert their homes to real property, 16 percent of loans to these homeowners were chattel loans.[3] This indicates that even for owners who are not in land-lease agreements, there may be other barriers preventing some owners from accessing traditional mortgages.

There are several features of chattel loans that make them less desirable than standard mortgages. First and foremost, the interest rate on chattel loans is often significantly higher. For example, in 2019, the average interest rate on a chattel loan for a manufactured home was 7.46 percent, compared to 4.57 percent for traditional mortgages.[4] There are also significant

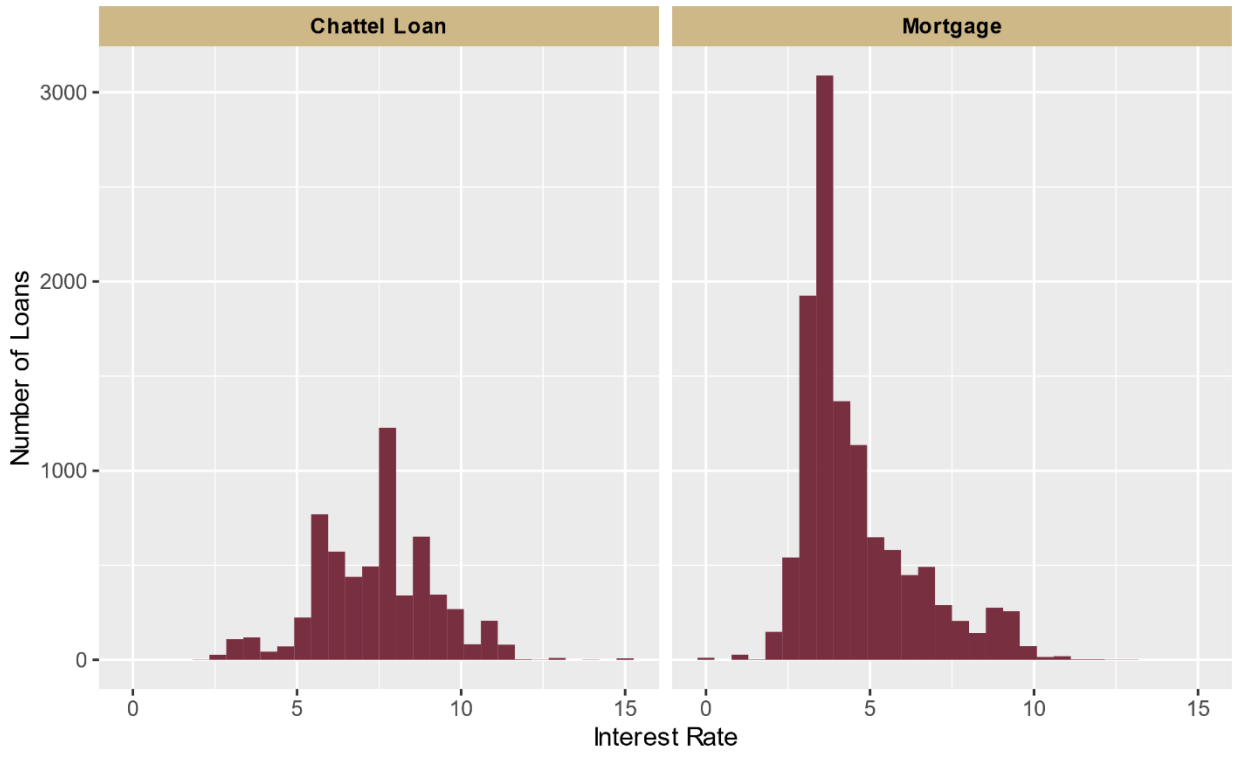
[1] Figure provided by the FMHA using DataComp.

[2] HMDA data 2019. Author's calculation. Note that 2% of households used a nontraditional leasing or ownership arrangement. For example, some owners lease land from a relative for free.

[3] HMDA data 2019. Author's calculation.

[4] HMDA data 2019. Author's calculation.

differences in the distribution of interest rates, as can be seen in Figure 1. Figure 1 shows histograms of the number of loans issued for chattel loans and mortgages. Chattel loans have a relatively symmetrical distribution, while mortgages are clustered around low interest rates, with a tail extending into higher interest rates.



Source: HMDA data 2019. Author's calculation.

Figure 1. Histograms of the distribution of loans across interest rates for chattel loans and mortgages in 2019

In addition to higher interest rates, chattel loans provide fewer legal protections for borrowers. For a traditional mortgage, a lender must go through a foreclosure process to seize a home, which can take anywhere from several months to a year to go through the courts. For a chattel loan, lenders use the repossession process to seize a home, which takes significantly less time. This gives homeowners much less time to make up missed payments on a chattel loan. A final difference between chattel loans and mortgages is that the longest chattel loan available is for 23 years. Mortgages, on the other hand, can last 30 years, allowing for significantly lower monthly payments.

In addition to the ability to access traditional mortgage financing, classifying manufactured homes as personal property leads to higher taxes being levied. About 40% of the selling price of

a new home – both manufactured and site-built – are materials used in construction. Builders of site-built homes are charged sales tax on materials used in construction while home manufacturers have a resale certificate which allows them to purchase building materials tax-free. However, a home buyer is charged sales tax on the entire purchase price of a manufactured home, which includes materials, labor, and profit. Therefore, manufactured homes face a much higher sales tax burden than site-built homes. For example, a site-built home that cost $80,000 to build before taxes will face a total state sales tax bill of approximately $1,920. A similar manufactured home will face a state sales tax burden of $5,760.[5] While many barriers to owning a manufactured home will still persist after reducing the sales tax, bringing taxes closer to parity with site-built homes is an important step in making housing affordable.

Methodology

There are several studies that relate to how changes in housing tax policies affect the affordability and economic activity. The priced-out methodology was pioneered by the National Association of Homebuilders (NAHB). In 2021, the NAHB determined that 153,967 additional households would be priced-out of owning a new home following a $1,000 increase in price (National Association of Home Builders, 2021). Another study examines the effect of different housing tax credits and tax incentives on the housing market using macroeconomic modelling (Sami & Zubairy, 2016). It finds that, while the government could raise revenues by increasing effective taxes on housing, it would come at the cost of significant losses in output. This relates to the current study in that, while decreasing taxes on manufactured homes could lead to lower state government revenues, it could lead to significant increases in economic activity. In contrast, using a different economic model, Kamila Sommer and Paul Sullivan (2018) found that repealing the mortgage interest credit (which would effectively increase taxes on housing) would lead to an increase in welfare for most households, but a decrease in welfare for households with large mortgages.

Methodology and Data

Tax Incidence. One of the key problems with any tax change is that both buyers and sellers will change their behavior in response to the tax change. This means that it is not immediately clear how much of the benefit from the tax change will go to purchasers of manufactured homes and how much to retailers and manufacturers. In particular, manufacturers may be able to raise

[5] Based on state sales tax only. Local sales taxes may vary significantly depending on locality. Taxes for a site-built home are calculated as $80,000 x 0.40 x 0.06. Taxes for a manufactured home are calculated as $80,000 x 1.2 x 0.06 as FMHA indicated that a 20% markup is common in the industry.

their prices in order to absorb some of the benefit of the tax change. Therefore, a 3 percent reduction in the sales tax on manufactured homes may lead to a less than 3 percent reduction in the price paid by home buyers. In the worst-case scenario (from the perspective of buyers), manufacturers may be able to absorb the entire benefit of the tax reduction.

It is not easy to predict how much of benefit from the tax reduction will go to consumers, as it requires estimating supply and demand curves. However, a recent change in the tax code in the neighboring state of Georgia can serve as a template for how the market will change in Florida. In 2018, the state of Georgia passed legislation exempting 50 percent of the price of manufactured homes from sales tax, to take effect in 2019. This bill has an almost identical effect as the proposed 3 percent reduction in sales tax examined in this study. Through careful econometric analysis, we can determine how much prices in Georgia changed relative to states where no such change occurred. Then we can use this price change as a model for how the proposed 3 percent reduction in sales tax will affect prices in Florida.

This study uses a difference-in-differences methodology to determine the change in prices in Georgia following the tax change. Difference-in-differences calculates the difference in prices before a change in policy between a control group that will not experience the policy change and a treatment group that does experience the policy change. Next, the difference in prices between the treatment and control groups are examined after the policy change. The difference-in-differences will show how much prices changed before and after the policy relative to a group that did not experience the price change.

Data on prices for manufactured homes are not available at the state level. However, the Federal Financial Institution Council maintains a database of all mortgages issued in every state known as the "Home Mortgage Disclosure Act" (HMDA) database. While the data has limitations, the size of mortgages can be used as a proxy for purchase price.

Priced-Out Analysis. Once the approximate change in selling price has been calculated, this study uses a priced-out analysis to determine how many new households will be able to afford a manufactured home after the tax change. The methodology for the priced-out analysis is based on the National Association of Home Builders' (NAHB's) 2021 priced-out analysis[6] to determine and identify approximately how many households ***would not*** qualify for a typical mortgage based on their income. To do so, we calculate the average monthly cost of owning a manufactured home, including mortgage repayments, PMI, insurance, taxes, and rent. Next, we determine the lowest income that would qualify for a typical loan. Most banks use a "28 percent" rule when determining if a person qualifies for a mortgage. The 28 percent rule states that a household should not spend more than 28 percent of its income on housing expenses

[6] https://www.nahb.org/-/media/NAHB/news-and-economics/docs/housing-economics-plus/special-studies/2021/special-study-nahb-priced-out-estimates-for-2021-february-2021.pdf

each year.[7] Finally, the research team determined how many people in the state of Florida fall below this income threshold.

Loan sizes, interest rates, and terms were obtained from the (HMDA) 2019 data.[8] In addition, this data was used to determine if a manufactured home was placed on private land (a private-lot home) or on leased land (a land-lease home). Average property taxes come from H&R Block and the Leon County Tax Commission.[9,10] The average homeowner's insurance was retrieved from the National Association of Insurance Commissioners (NAIC) 2020 report.[11] Income distributions in Florida are estimated using American Community Survey (ACS) data using the household sample weights retrieved from IPUMS.[12]

Economic Impact Analysis. The first step in the process is determining how sales of manufactured homes will be affected by the change in prices. Market responses to changes are complex, relying on many interrelated variables – market structure, firm capacities, prices of close substitutes, disposable incomes, and consumer preferences to name a few. To address this, we take a statistical approach to the change in prices, constructing a vector autoregression (VAR) model that relates manufactured home shipments to past median rent prices, median mortgages on manufactured homes, and median mortgages on site-built homes. Thus, rather than attempting to model the complex manufactured home market, we simply look at how shipments have changed in response to past price changes, holding the prices of related substitutes (rent and site-built homes) constant.

The trade-off benefit of this approach is simplicity, but the cost comes from imposing a technical assumption on how shipments relate to past prices. In order for the model to be accurate, it must assume that current shipments do not depend on current prices, but on past prices. Conversations with FMHA representatives indicated that this assumption is likely met, as shipments occur between six months and a year after an initial sales price is agreed upon.

Data for the VAR comes from three sources. Median mortgage prices and rent prices in Florida are constructed from ACS data extracted from IPUMS.[13] Shipments of manufactured homes are from the U. S. Census Bureau's Manufactured Housing Survey (MHS).[14] Finally, the average price of a manufactured home was provided by the FMHA.[15]

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[7] https://time.com/nextadvisor/mortgages/how-much-income-should-go-to-your-mortgage/
[8] https://www.consumerfinance.gov/data-research/hmda/historic-data/
[9] https://www.hrblock.com/tax-center/filing/states/florida-property-tax/
Note; they are similar in every county.
[10] https://www.flhsmv.gov/pdf/forms/83140.pdf. Note that manufactured homes are listed as "mobile homes."
[11] https://content.naic.org/sites/default/files/publication-hmr-zu-homeowners-report.pdf
[12] https://usa.ipums.org/usa/
[13] https://usa.ipums.org/usa/
[14] https://www.census.gov/programs-surveys/mhs.html
[15] Personal correspondence with Jim Ayotte.

An advantage of a VAR approach is that confidence intervals of the effect of a change in shipments from a change in prices can be constructed and used as a range of estimated impacts. Thus, we can estimate the economic impact for a range of low to high estimates, and a most likely change in shipments from a 90 percent confidence interval.

The next step in the process is the economic impact analysis. FSU CEFA used a well-established analytical tool known as the Impact Analysis for Planning, or IMPLAN® model. IMPLAN is a widely accepted integrated input-output model that is used extensively by state and local government agencies to measure proposed legislative and other program and policy economic impacts across the private and public sectors. There are several advantages to using IMPLAN:

- It is calibrated to local conditions using a relatively large amount of local county level and state of Florida specific data;
- It is based on a strong theoretical foundation, and;
- It uses a well-researched and accepted applied economics impact assessment methodology supported by many years of use across all regions of the U.S.

The economic impact model used for this analysis was specifically developed for the counties of Florida, and includes 534 sectors, 25 institutional sectors, and most recent dataset[16] – year 2019 data. IMPLAN's principal advantage is that it may be used to estimate direct, indirect, and induced economic impacts for any static (point-in-time) economic stimulus. IMPLAN uses an economic multiplier approach to estimating impacts.[17] There is a direct effect that comes from the increase in revenues associated with the change in sales. Next, there is an indirect effect that comes from retailers and manufacturers paying their suppliers and employees. Finally, an induced effect comes from the increase in wealth experienced by suppliers and employees of retailers and manufacturers who spend their increased revenues in the local economy.

Results of the Priced-Out Analysis and Economic Impact Analysis

Tax Incidence. Using the HMDA data, the study team found that borrowers with similarly sized mortgages were able to afford homes of 0.1 percent greater value in the first year after the tax change and 7 percent greater value in the second year after the tax change in Georgia, compared to borrowers in Florida and South Carolina. This indicates that while manufacturers may have been able to capture some of the benefit of the tax change in the first year, by the

[16] Florida Year 2019 data was the most recent available data at the time of the analysis. Florida 2020 data has now been released at the end of December 2021.

[17] While IMPLAN is widely accepted, it is important to note that the multipliers used are estimates and actual impacts may vary.

second year all the benefits of the tax change were going to buyers. Therefore, the research team is validated in assuming that a 3 percent reduction in the sales tax will lead to a 3 percent reduction in the loan size needed for a manufactured home. See Appendix A for details on the difference-in-differences analysis.

A drawback of using statistical analysis to determine tax incidence rather than economic theory is that it is unclear why manufacturers were able to capture some of the tax benefit in the first year after the initial change but not in the second year. In theory, competition among manufacturers should reduce the price of manufactured homes until they stabilize with manufacturers receiving roughly the same profits as before the change. However, the data appears to support a gradual decline in markups lasting at least a year.

One possibility for the slow decline comes from the typical sales process for a manufactured home. Normally, buyers and sellers agree on an initial selling price but the sale is not finalized until the home is shipped. Experts at FMHA indicated this process may take up to six months. This means that many final sales in 2019 were negotiated in 2018, before the tax change came into effect. It may be the case that these sales influenced the estimates from 2019, making it appear that manufacturers were able to capture more of the benefits from the tax than they actually did.

Priced-out Analysis. The research team based the loan assumptions on the NAHB 2021 priced-out analysis, with some adjustments for manufactured homes.[18] First, we assume a 30-year mortgage for manufactured homes placed on personal land (the most common in the Home Mortgage Disclosure ACT [HMDA] data)[19], but we assume a 23-year chattel loan for land-leased homes, since the HMDA data indicated that in 2019 no 30-year loans were issued for land-leased homes. In addition, for private-lot homes, we assume a higher-than-average PMI of 1 percent, as credit scores are correlated with income and manufactured homes tend to be purchased by low-income families.

The priced-out analysis presented here has limitations which we attempt to overcome through further analysis. Firstly, as indicated previously, the priced-out analysis cannot determine how manufactured home sales are expected to change, except that they are not expected to decrease. This is because the priced-out analysis only measures a change in *potential* new customers. It cannot determine how sales of manufactured homes will change as a result. The research team attempts to address this limitation through the economic impact analysis by using historical pricing data on manufactured housing and close substitutes.

[18] https://www.nahb.org/-/media/NAHB/news-and-economics/docs/housing-economics-plus/special-studies/2021/special-study-nahb-priced-out-estimates-for-2021-february-2021.pdf

[19] https://www.consumerfinance.gov/data-research/hmda/historic-data/

Secondly, the change in sales tax will affect the price of manufactured homes along the quality spectrum, from the most affordable homes to the most expensive. However, this analysis only examines a change in the price of the median manufactured home.

Table 1 summarizes the findings of the priced-out analysis. Findings are presented for land-leased and private-lot manufactured homes before and after the change in tax rates. First, it lists the monthly costs of buying a manufactured home for land-leased and private lot homes. Next, it lists the annual income needed to qualify for a loan for a manufactured home for both private-lot and land-lease homes. Finally, the number of Floridians priced-out of each type of home are listed.

Table 1 shows that the reduction in the sales tax results in lower costs for both land-leased and private lot manufactured homes, but that the savings is more significant for manufactured homes on a leased land, as the average mortgage repayment decreases more for land-leased homes. Approximately 39,573 new families in Florida will be able to afford a private-lot manufactured home after a 3 percent reduction in sales tax. In addition, 39,055 new families in Florida will be able to afford a land-leased manufactured home after the tax reduction.

Table 1. Findings of the Priced-Out Analysis

Manufactured Home Item	Land-Lease Before 3% Tax Decrease	Land-Lease After 3% Tax Decrease	Change	Private lot Before 3% Tax Decrease	Private lot After 3% Tax Decrease	Change
Mortgage Repayment	$500.75	$485.72	$15.03	$631.35	$619.51	$11.84
PMI	$0.00	$0.00	$0.00	$112.83	$110.72	$2.11
Taxes	$3.34	$3.34	$0.00	$120.49	$120.49	$0.00
Insurance	$66.58	$66.58	$0.00	$104.58	$104.58	$0.00
Rent	$580.00	$580.00	$0.00	$0.00	$0.00	$0.00
Total	$1,150.67	$1,135.64	$15.03	$969.25	$955.30	$13.95
Required Annual Income	$49,317.86	$48,670.71	$647.15	$41,539.29	$40,941.28	$597.92
Priced-out Households	3,648,829	3,609,774	39,055	3,123,006	3,083,433	39,573

Economic Impact Analysis. Table 2(a) contains high, median, and low estimates of sales of new manufactured homes in Florida. The VAR analysis conducted by the team determined that a 3 percent reduction in sales taxes should lead to approximately 1,844 new manufactured home sales, approximately 737 of which will be placed in manufactured home parks. The research team predicts a much higher change in shipments than the 2020 Revenue Estimating Conference (REC).[20] The reason for the discrepancy is that the REC does not consider the change in the relative price of manufactured homes, but instead uses a simple linear trend. When manufactured homes experience a price reduction compared to related goods (rent and site-built homes) one should expect an increase in demand that leads to an increase in sales.

[20] http://edr.state.fl.us/Content/conferences/revenueimpact/archives/2020/_pdf/page568-570.pdf

Table 2. VAR and Economic Impact Analysis Results from a 3% Reduction in Sales Tax

(a) Sales and Revenue				
	Direct Sales and Revenue from 3% Reduction in Sales Tax		Revenue at Manufactured Home Parks	
	Estimated Increase in Shipments of New Homes	Estimated Increase in Revenue	Estimated New Homes at Manufactured Home Parks	Estimated Increase in Rental Revenues
High Estimates	3,033	$243,819,943	1,213	$703,656
Median Estimates	1,844	$148,176,087	737	$427,692
Low Estimates	654	$52,532,231	262	$151,728

(b) Total Economic Impacts			
	Economic Output (Sales and Revenue)	Employment or Jobs	Income or Wages
High Estimates	$304,536,518	3,584	$114,959,618
Median Estimates	$185,075,363	2,178	$69,864,152
Low Estimates	$65,614,207	772	$24,768,686

Table 2. VAR and Economic Impact Analysis Results from a 3% Reduction in Sales Tax, Cont.

(c) Employment				
	Direct	Indirect	Induced	Total
High Estimates	2,566	457	561	3,584
Median Estimates	1,559	278	341	2,178
Low Estimates	553	98	121	772

(d) Output				
	Direct	Indirect	Induced	Total
High Estimates	$139,285,575	$76,651,889	$88,599,054	$304,536,518
Median Estimates	$84,647,738	$46,583,520	$53,844,105	$185,075,363
Low Estimates	$30,009,901	$16,515,150	$19,089,156	$65,614,207

(e) Income				
	Direct	Indirect	Induced	Total
High Estimates	$66,529,130	$21,608,168	$26,822,320	$114,959,618
Median Estimates	$40,431,589	$13,131,894	$16,300,669	$69,864,152
Low Estimates	$14,334,049	$4,655,620	$5,779,017	$24,768,686

(f) State, Local and Federal Taxes			
	State and Local Taxes	Federal Taxes	Total
High Estimates	$22,618,989	$27,852,417	$50,471,406
Median Estimates	$13,746,187	$16,926,687	$30,672,874
Low Estimates	$4,873,384	$6,000,958	$10,874,342

The manufacture and sale of additional homes should lead to a substantial increase in economic activity in Florida. Table 2(b) summarizes the expected increase in economic activity. Focusing on the median estimates, the increase in the manufacture and sale of homes should lead to approximately 2,178 new jobs, an increase of $69,864,152 in wage and salary income, and $185, 075,363 in additional economic activity.

IMPLAN calculates both the direct impact of a change in economic activity and the indirect and induced impacts as described in the methodology section. Tables 2(c-f) show the total direct, indirect, and induced effects of the expected increase in the manufacture and sale of homes. Importantly, Table 2(f) shows that the increase in economic activity following the sales tax reduction may lead to significant increases in tax revenue, offsetting a large part of the reduction in tax revenue collected by the tax change. The team predicts that state and local taxes generated by the additional economic activity will be approximately $13,746,187. The 2022 Revenue Estimating Conference (REC) estimated that the reduction in sales tax would lead to a $17,046,120 decline in sales tax collected (Revenue Estimating Conference, 2022). However, this amount is largely offset by taxes generated from the increase in economic activity stemming from new sales of manufactured homes. Using the REC estimate, the research team estimates that the true reduction in state and local taxes would be approximately $3,299,933.

Conclusions

The research team demonstrated in this analysis that a 3 percent reduction in the sales tax on manufactured homes would have significant benefits for Floridians. After the tax change, approximately 39,573 more families will be able to afford a manufactured home on private land. In addition, the tax change is expected to lead to significant economic activity. Manufactured home sales are projected to increase by 1,844 after the tax change, supporting 2,178 new jobs, $69,864,152 in income, and $185,075,363 in additional economic output.

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Appendix A. Difference-in-Differences Analysis Results

The full results of the difference-in-differences analysis are presented here in table form.

Table 4(a). Results of a difference-in-differences regression

	Dependent variable:
	Log(Property value)
Income	0.001***
	(0.0002)
Loan amount	0.014***
	(0.0001)
2019	-0.064***
	(0.022)
2020	-0.061***
	(0.021)
Georgia	-0.057
	(0.043)
Loan amount	-0.00001***
	(0.00000)
Income x 2019	0.002***
	(0.0003)
Income x 2020	0.002***
	(0.0003)
Loan amount x 2019	0.001***
	(0.0003)
Loan amount x 2020	0.001***
	(0.0003)
Income x Georgia	0.003***
	(0.001)
Loan amount x Georgia	0.0003
	(0.001)
Georgia x 2019	0.062
	(0.061)

Table 4(b): Results of a difference-in-differences regression, cont.

	Dependent variable:
	Log(Property value)
Georgia x 2020	0.201***
	(0.061)
Income x Loan amount x 2019	-0.00003***
	(0.00000)
Income x Loan amount x 2020	-0.00003***
	(0.00000)
Income x Loan amount x Georgia	-0.00003***
	(0.00001)
Income x Georgia x 2019	-0.002*
	(0.001)
Income x Georgia x 2020	-0.003**
	(0.001)
Loan amount x Georgia x 2019	-0.001
	(0.001)
Loan amount x Georgia x 2020	-0.003***
	(0.001)
Income x Loan amount x Georgia x 2019	0.00002*
	(0.00001)
Income x Loan amount x Georgia x 2020	0.00004***
	(0.00001)
Constant	3.279***
	(0.013)
Observations	16,703
R^2	0.754
Adjusted R^2	0.754
Residual Std. Error	0.232 (df = 16679)
F Statistic	2,222.066*** (df = 23; 16679)
Note: Standard errors in parentheses.	*p<0.10**p<0.05***p<0.01

The results from Table 4 should be carefully interpreted. The goal of the analysis was to see how the value of property for which borrowers were able to secure loans changed after the tax change in Georgia, holding their income level and loan amount fixed. The most important lines from Table 4 are “Georgia x 2019” and “Georgia x 2020.” These indicate that there was a substantial increase in property values after the tax change. However, the lines that include income and loan amount indicate that this increase depends on both the loan amount and the level of income for a borrower. One instructive way of interpreting the results of this table is to see how much property values increased for the median loan amount and median property values compared to manufactured homes in South Carolina and Florida. The median loan value in Georgia was $55,000, while the median income was $49,000. At these amounts, we find that property values increased by 0.1 % in 2019 and 7% in 2020, compared to borrowers in Florida or South Carolina.