



# AN ECONOMIC ANALYSIS OF LOW WATER LEVELS IN HARTWELL LAKE

Jeff Allen, Rob Carey, Lori Dickes, Ellen Saltzman, Corey Allen, & Michael Mikota

Upper Savannah River Basin Council  
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# Where We Like Lake Levels To Be 660.55 feet above MSL



# Where We Were December 2008 637.53 feet above MSL



# Research Question

- Do changing lake levels have a **measurable** economic impact on the six counties that border Hartwell Lake?
  - Anderson
  - Oconee
  - Pickens
  - Franklin
  - Hart
  - Stephens
- Grant from USACE with matching funds from counties
- Phase II study with interviews of businesses and lake access property owners was not funded

# Data Examined

- Monthly data 1998-2009
- **Lake:** level, recreation use, average air temperature
- **Real estate:** Lake access parcel transactions (location, date(s), \$\$)
- **Gross retail sales:** by county in areas most likely to be affected by lake activities.

# Gross Retail Sales Data, SC

- Monthly totals by county, 2005–2009
- Available at 4-digit SIC code
- Lake counties: Anderson, Oconee, Pickens
- Control counties: Lexington, McCormick, Newberry, Saluda

# Retail Sales Tax Revenue Data, GA

- Monthly sales tax revenue by county, 2001 - 2008
- Available at detailed GA commodity classification (not SIC or NAICS)
- Converted to 4-digit SIC codes
- Lake Counties: Franklin, Hart, Stephens
- Control Counties: Columbia, Elbert, Lincoln, McDuffie, Rabun, Wilkes

Table 2. Gross Retail Sales Categories

<b>SIC Code</b>	<b>Category</b>
2099	Retail Trade
5331	General Merchandise
5399	Miscellaneous General Merchandise
5411	Groceries
5511	Cars
5541	Gas Stations
5551, 5599	Boating Stores
5812	Restaurants
5813	Drinking Establishments (Bars)
5921	Liquor Stores
5941	Sporting Goods Stores

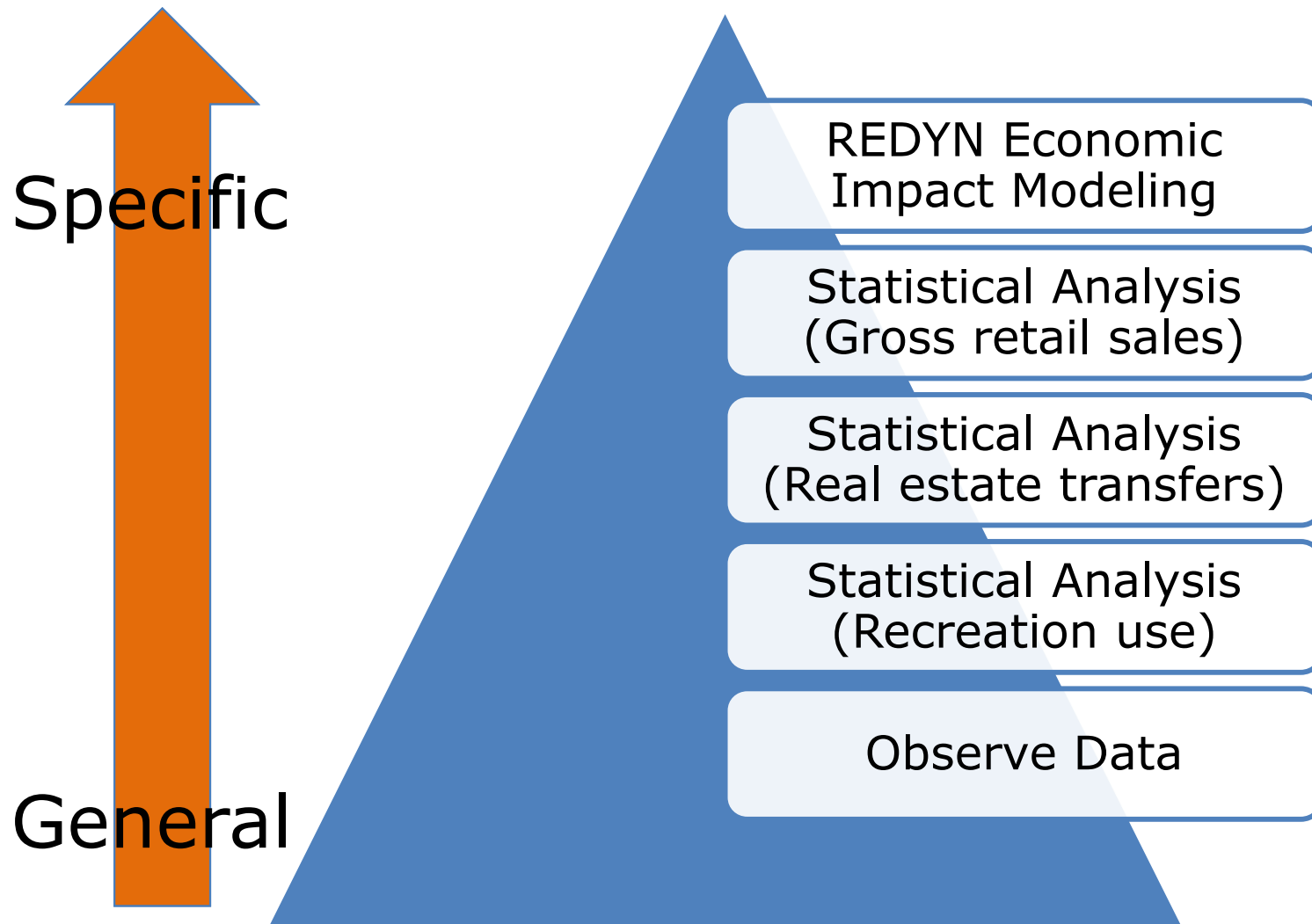


# Lake Hartwell Real Estate Transactions (lake access parcels)

County	Jan. 1998 to May 2009	Total Parcels
Pickens	14	295
Anderson	5,593	5,385
Hart	646	3,785
Stephens	643	524
Oconee	2,840	3,887
Franklin	338	1,002

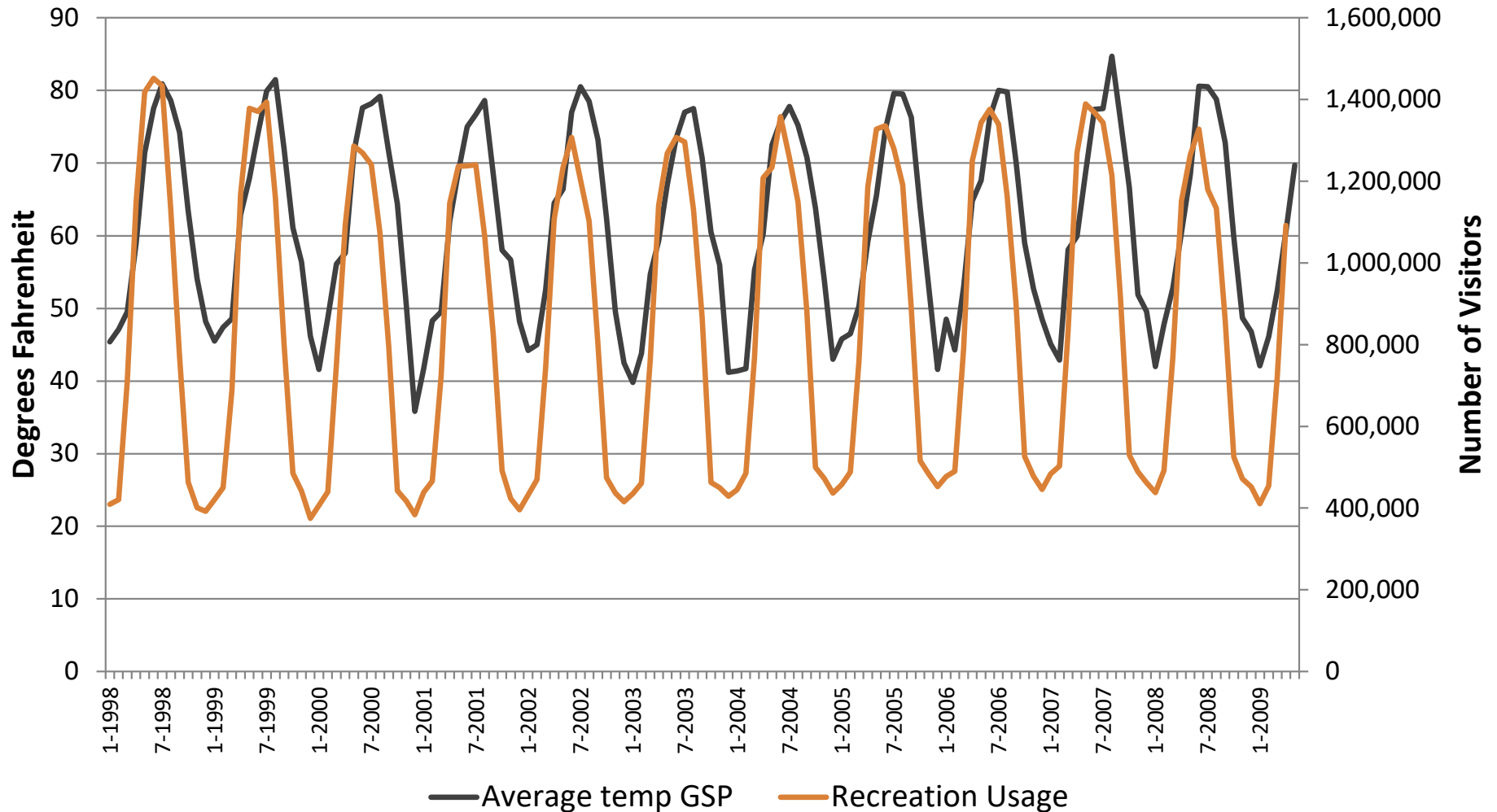
Real estate transactions for Lake Hartwell access parcels totaled 9,736 over the decade.

# Research Approach



What can we learn by  
observation?

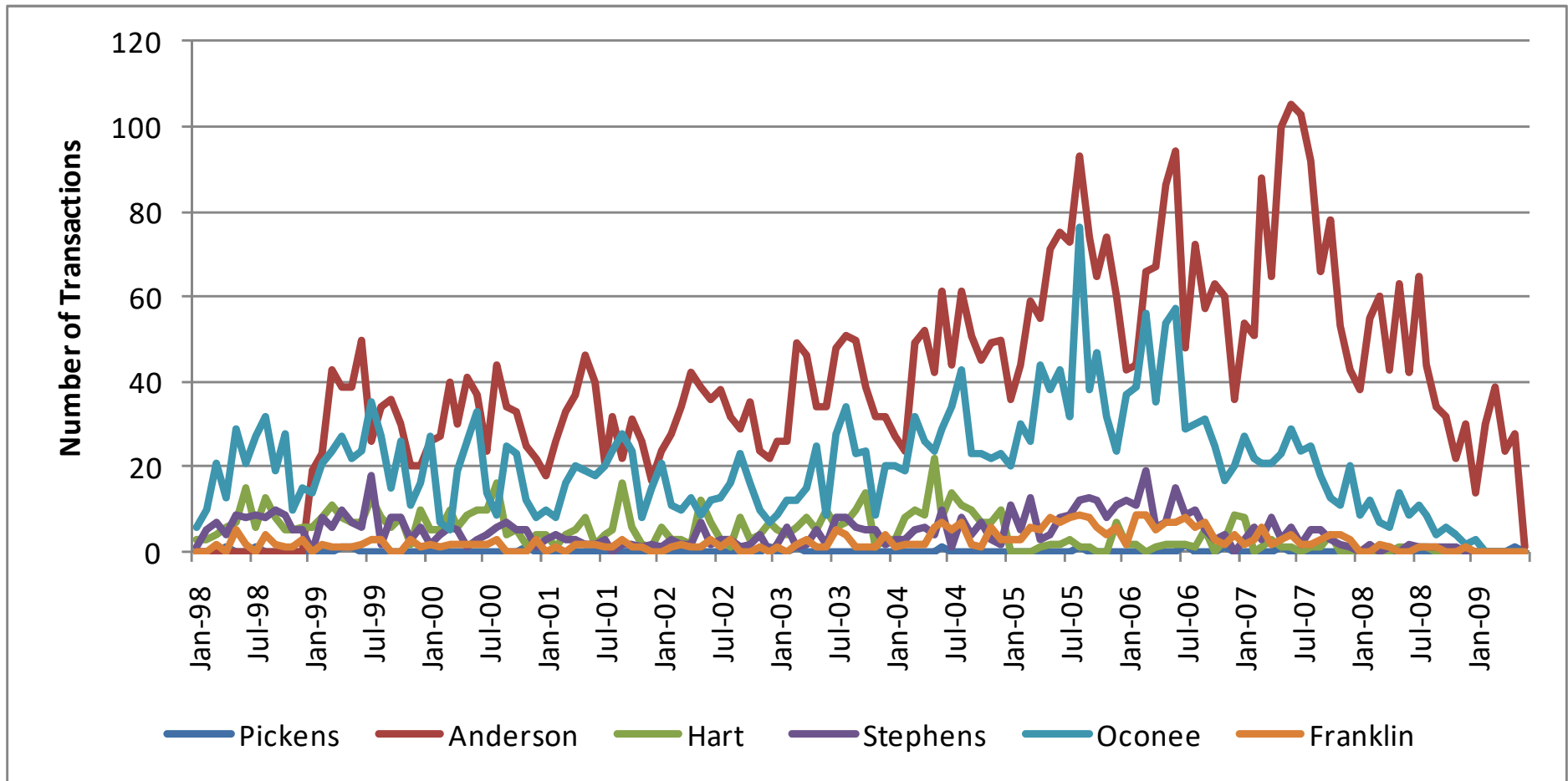
# Temperature and Recreation Use (USACE Facilities on Lake Hartwell)



Source: US Army Corps of Engineers

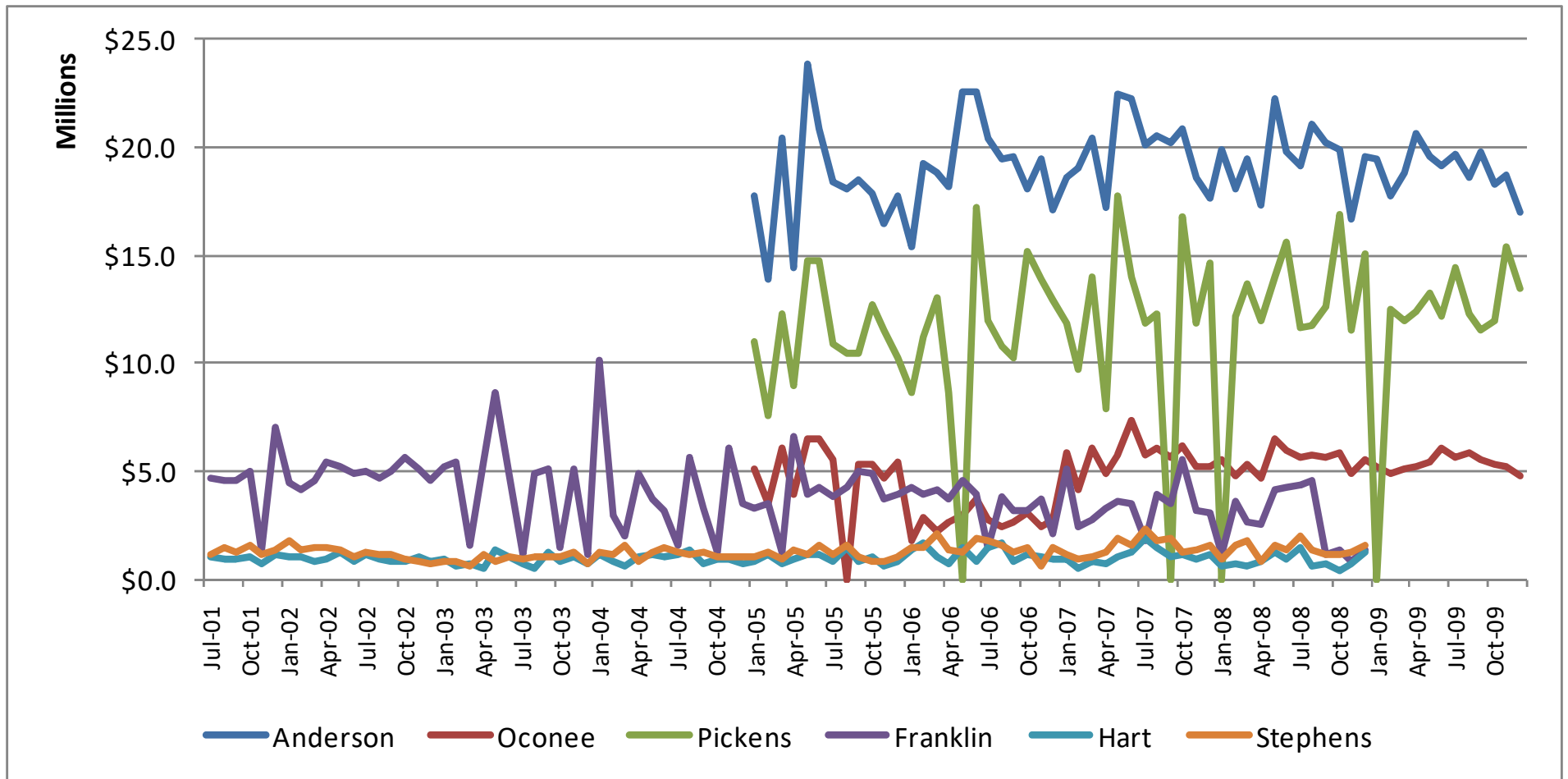
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# Lake Access Parcel Transactions (monthly)



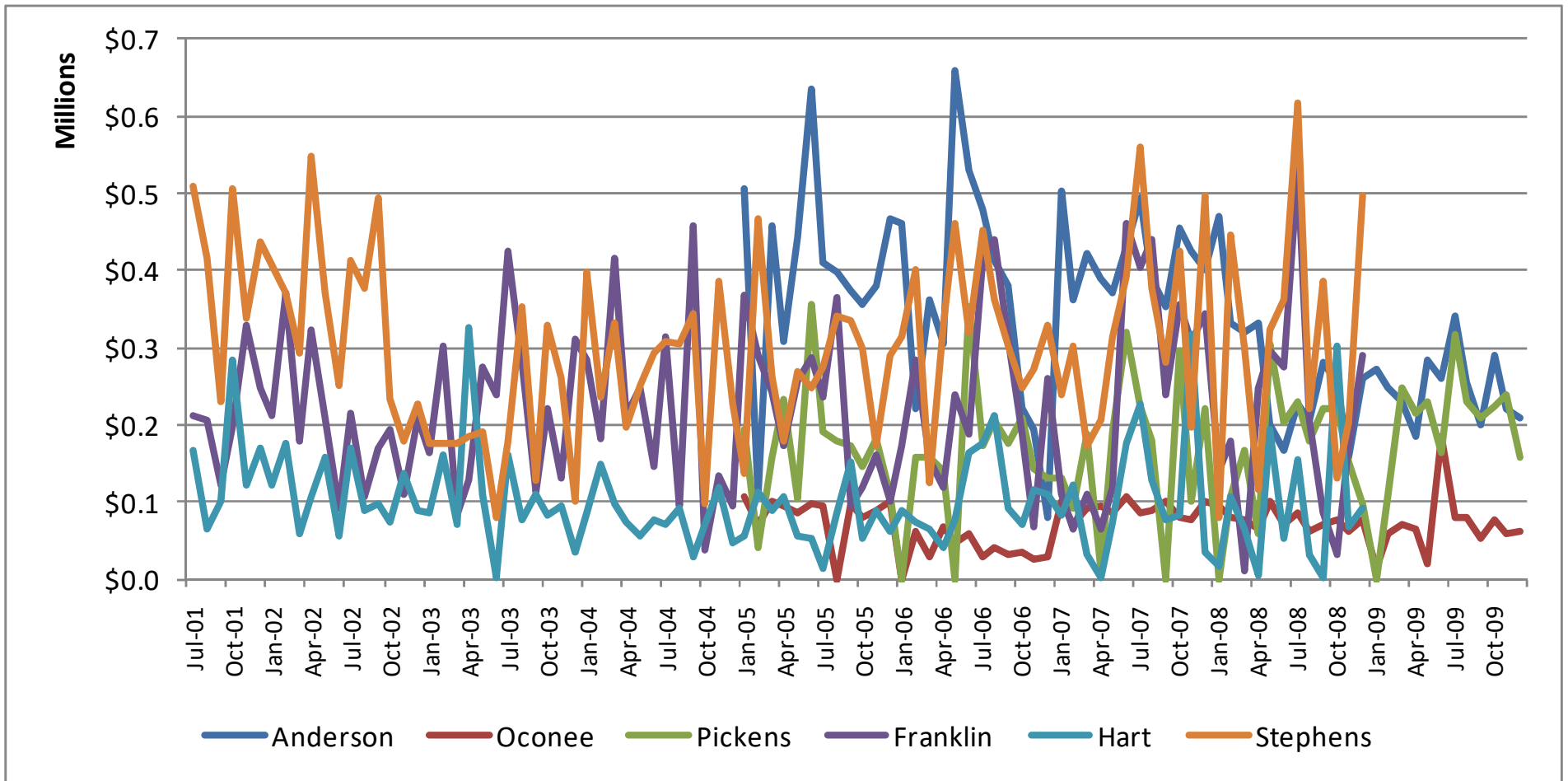
Source: County real property records

# Gross Retail Sales: Restaurants



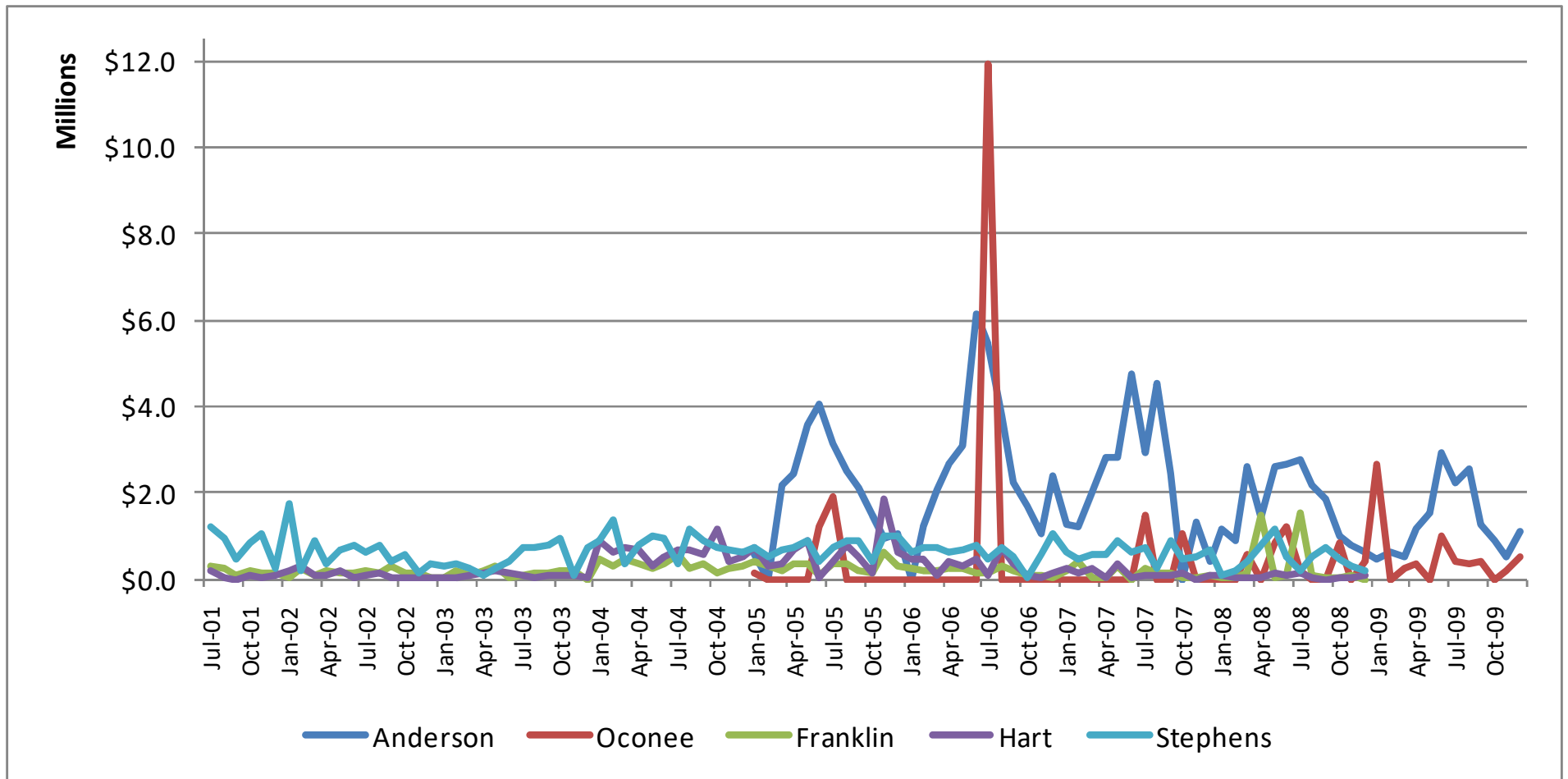
Source: SC Dept. of Revenue; GA Dept. of Revenue (estimated)

# Gross Retail Sales: Bars



Source: SC Dept. of Revenue; GA Dept. of Revenue (estimated)

# Gross Retail Sales: Boat & Other Recreational Dealers



Source: SC Dept. of Revenue; GA Dept. of Revenue (estimated)

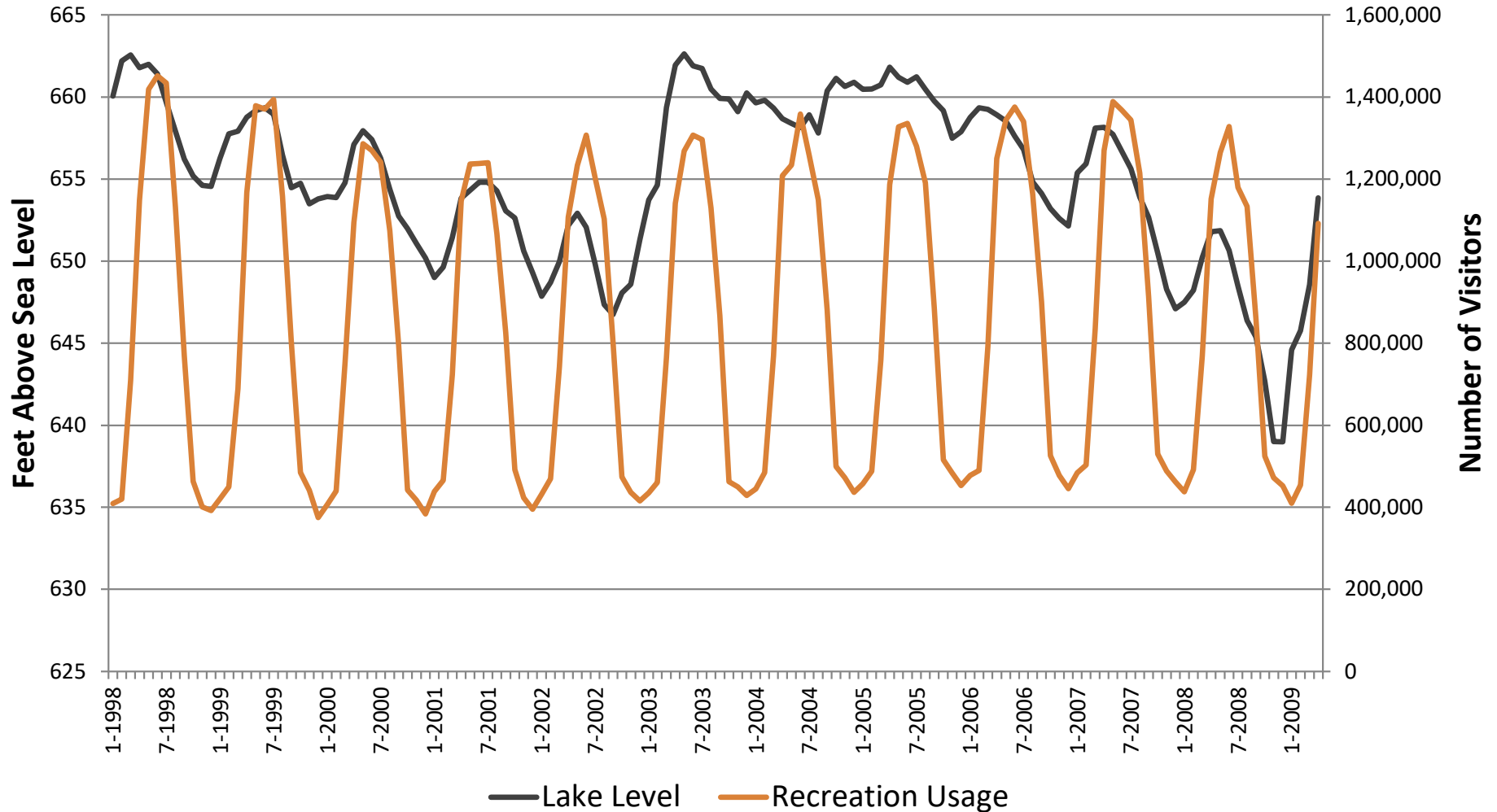


# How the Study Works: Linear Regression Analysis

- Isolates the impact of lake level on a *dependent variable*.
- In other words, how much does:
  1. Recreation use
  2. Gross retail sales (discounted for inflation)
  3. Real estate transactions

*“depend”* on lake level?
- Holding constant for:
  - Economic conditions (*state GDP, county PCPI*)
  - Season (measured as air temperature)

# Lake Level and Recreation Use (USACE Facilities on Lake Hartwell)



Source: US Army Corps of Engineers

# Recreation Use and Lake Level

(linear regression model)

- Every foot that Lake Hartwell is higher (or lower) translates into **21,200** more (or less) visitors per month, on average, to USACE facilities. This number is **2.5%** of average monthly visitors.
- *This holds constant for season and the broader economy (per capita income).*

# Duke Energy Lake Keowee Visitation Survey, 2008

- 33.2% of visitors to Lake Keowee were non-local in 2008.
- Tourism adds dollars to the local economy.
- For Lake Hartwell, this would be 278,000 non-local visitors per month, on average.
- Linear regression results suggest that the USACE recreation facilities on Lake Hartwell could lose monthly **6,950 non-local visitors per foot decrease** in lake level below full pool.

# Gross Sales and Lake Level

(linear regression model)

- Selected business categories (SIC codes) that are most likely to be affected by lake levels.
- Used those with statistically significant correlations with lake level.
- Some businesses may be impacted positively by lake levels (e.g. boat sales), while others may be impacted negatively (e.g. restaurants)
  - Eating out vs. picnic at lake
  - Geographical (some business districts not close to lake – e.g., Toccoa, GA)
  - Lake Keowee vs. Hartwell (Oconee & Pickens counties)

# Lake Level Changes

## & Lake Access Real Estate Transactions: Total Lost Sales (April 2007 – December 2008)

County	Transactions Gained/Lost	Actual Transactions Over Period	Gained/Lost % of Total
Franklin	-5.2	34.0	-15.4%
Hart	-5.4	15.0	-36.2%
Stephens	-5.6	45.0	-12.4%
Anderson	-32.1	1,233.0	-2.6%
Oconee	-7.7	277.0	-2.8%
Pickens	0.0	1.0	0.0%
<b>Total</b>	<b>-56.1</b>	<b>1,605.0</b>	<b>-3.5%</b>

# Assessing the Impact of Changing Lake Levels on the Region

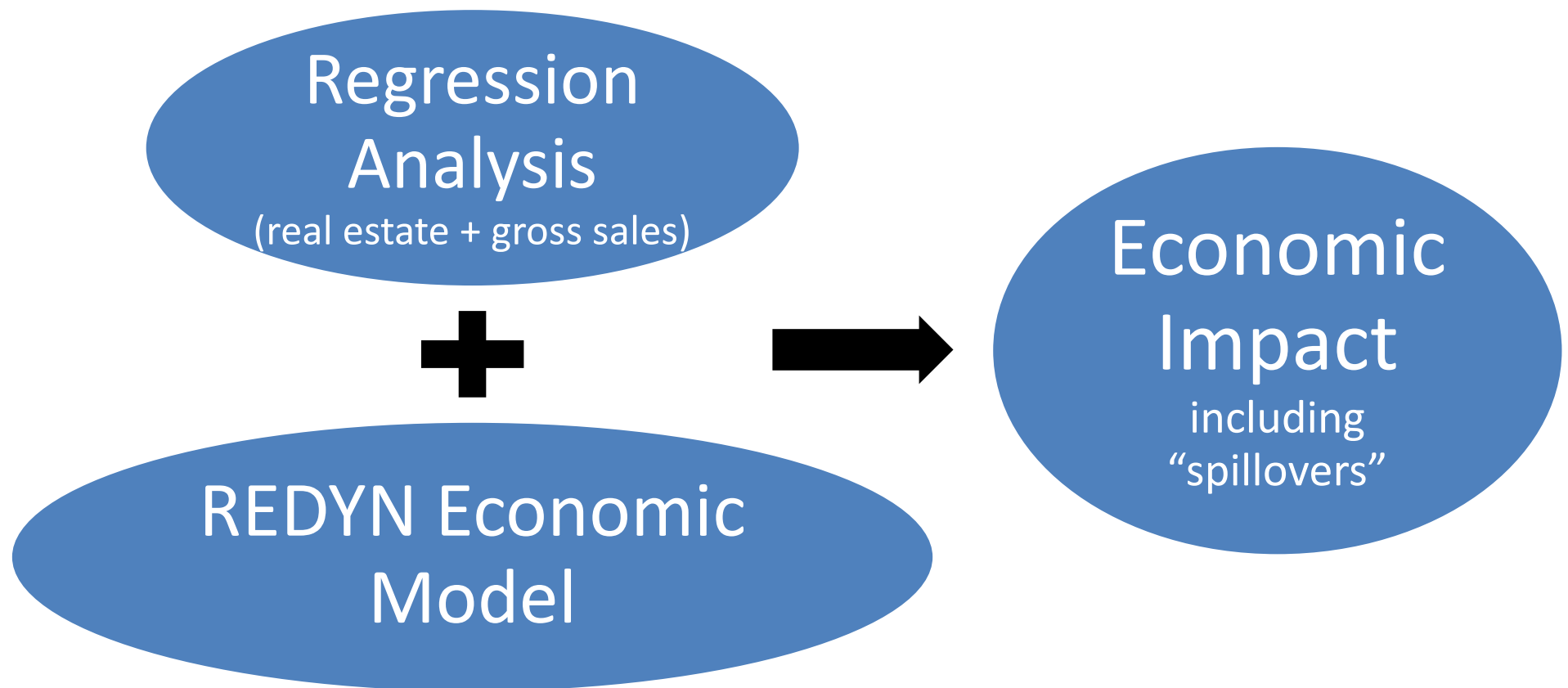


Table ES1. Total Estimated Economic Impact of Low Lake Levels (April 2007 – Dec. 2008)

<b>County</b>	<b>Employment (FTEs)</b>	<b>Output (2009 \$)</b>	<b>Disposable Income (2009 \$)</b>	<b>Net Revenue (2009 \$)</b>
Franklin	-2	-1,015,024	-229,631	-23,305
Hart	-2	-1,174,840	-295,908	+21,614
Stephens	+4	+1,780,665	+658,462	+66,351
Anderson	-32	-22,475,015	7,469,207	-983,306
Oconee	+10	+4,215,073	+1,443,975	+153,785
Pickens	0	-117,997	-292,100	-40,551
<b>Total</b>	<b>-23</b>	<b>-18,787,138</b>	<b>6,184,409</b>	<b>-805,412</b>



Table ES2. Economic Impacts in Context

<b>County</b>	<b>Output Impact of Low Water Levels (2009 \$)</b>	<b>Total County Output During 21 Month Drought (\$Billions)</b>	<b>Output Impact as % of Total County Output</b>
Franklin	-1,015,024	1.509	-0.07%
Hart	-1,174,840	1.678	-0.07%
Stephens	+1,780,665	1.960	+0.09%
Anderson	-22,475,015	13.811	-0.16%
Oconee	+4,215,073	5.424	+0.08%
Pickens	-117,997	5.862	+0.00%
<b>Total</b>	<b>-18,787,138</b>	<b>30.244</b>	<b>-0.06%</b>

# Strom Thurmond Institute



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