

# Effectiveness of Advertising on Lottery Ticket Sales

**OR: Auditing Lottery's Oddities**

**Peter Heineccius, JLARC Staff**

Joint Legislative Audit & Review Committee

March 8, 2013



Video Clip

# Lotteries Are Oddities in State Government

**selling a product  
instead of  
providing a service**

**\$12.1 Million  
Advertising Budget  
(FY 2011)**



# Bill Proposal: Do Good to Do Well

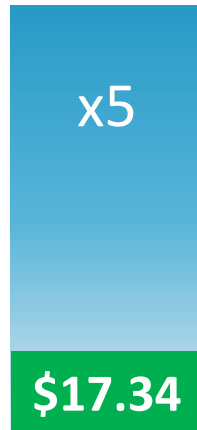
## Washington:

*"Buy a ticket, get rich!"*

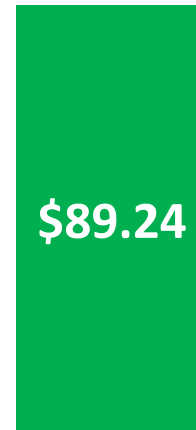
Advertises Greed



**WA Beneficiary:**  
School Construction



**WA**



**GA**

**Per Capita Revenue**

## Georgia:

*"Buy a ticket, send a kid to college!"*

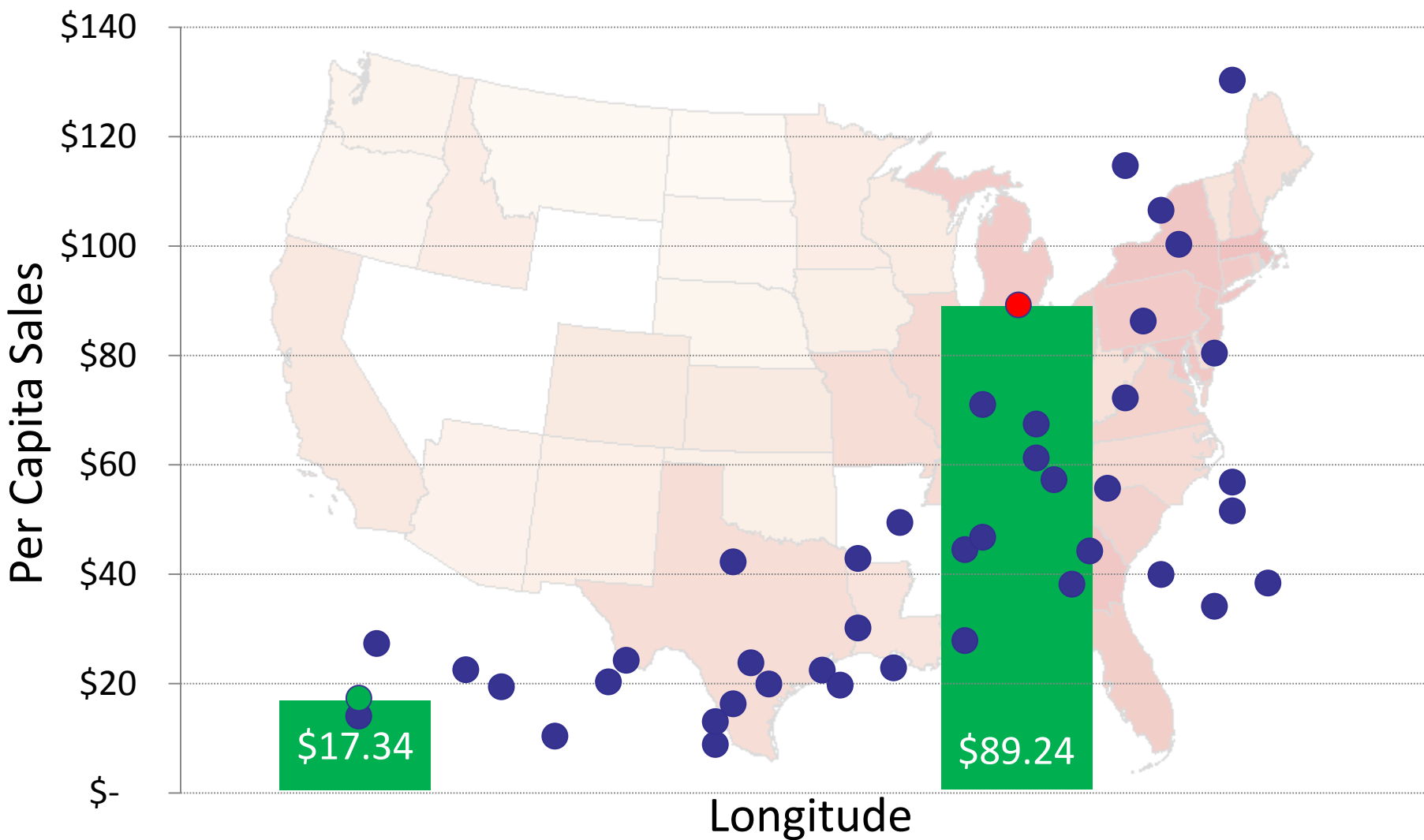
Advertises Altruism



**GA Beneficiary:**  
College Scholarships

Video Clip

# Lottery Sales Higher in Eastern U.S.



# Washington's Lottery Beneficiaries



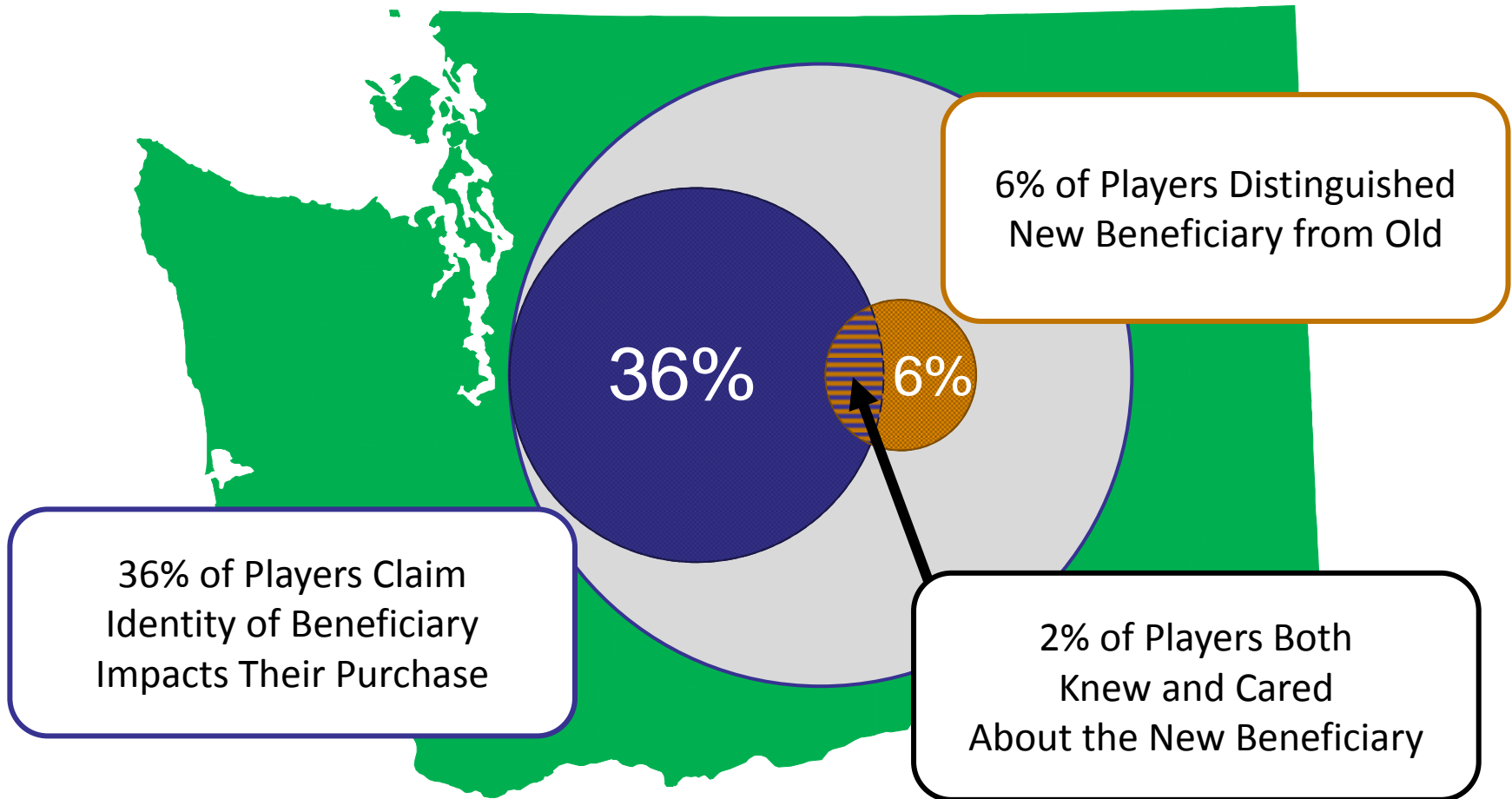
- 45% of players knew education was a beneficiary
- A third of those (15% of all players) claimed the beneficiary influenced their decision to buy a ticket

Sports Stadiums  
Economic Development  
Problem Gambling

Video Clip

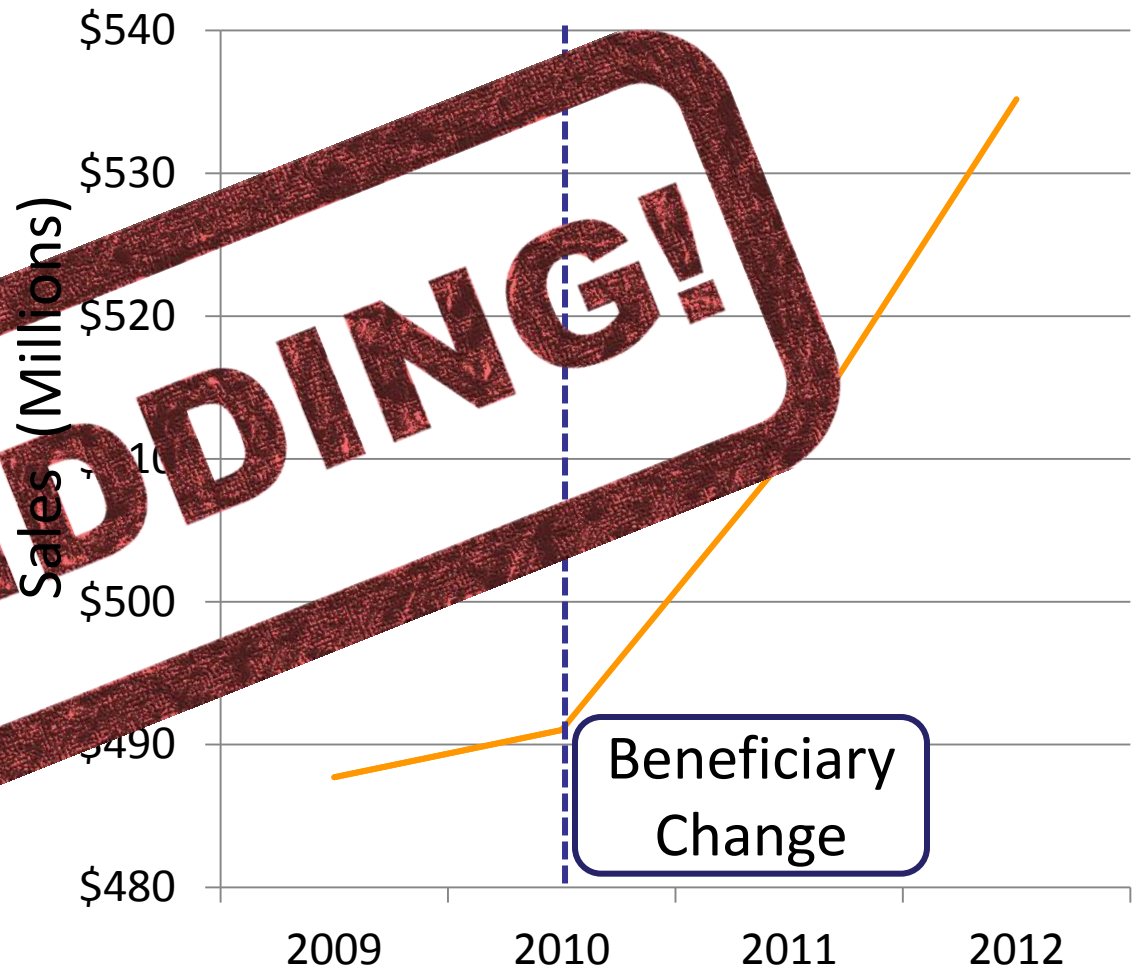


# Beneficiary Awareness

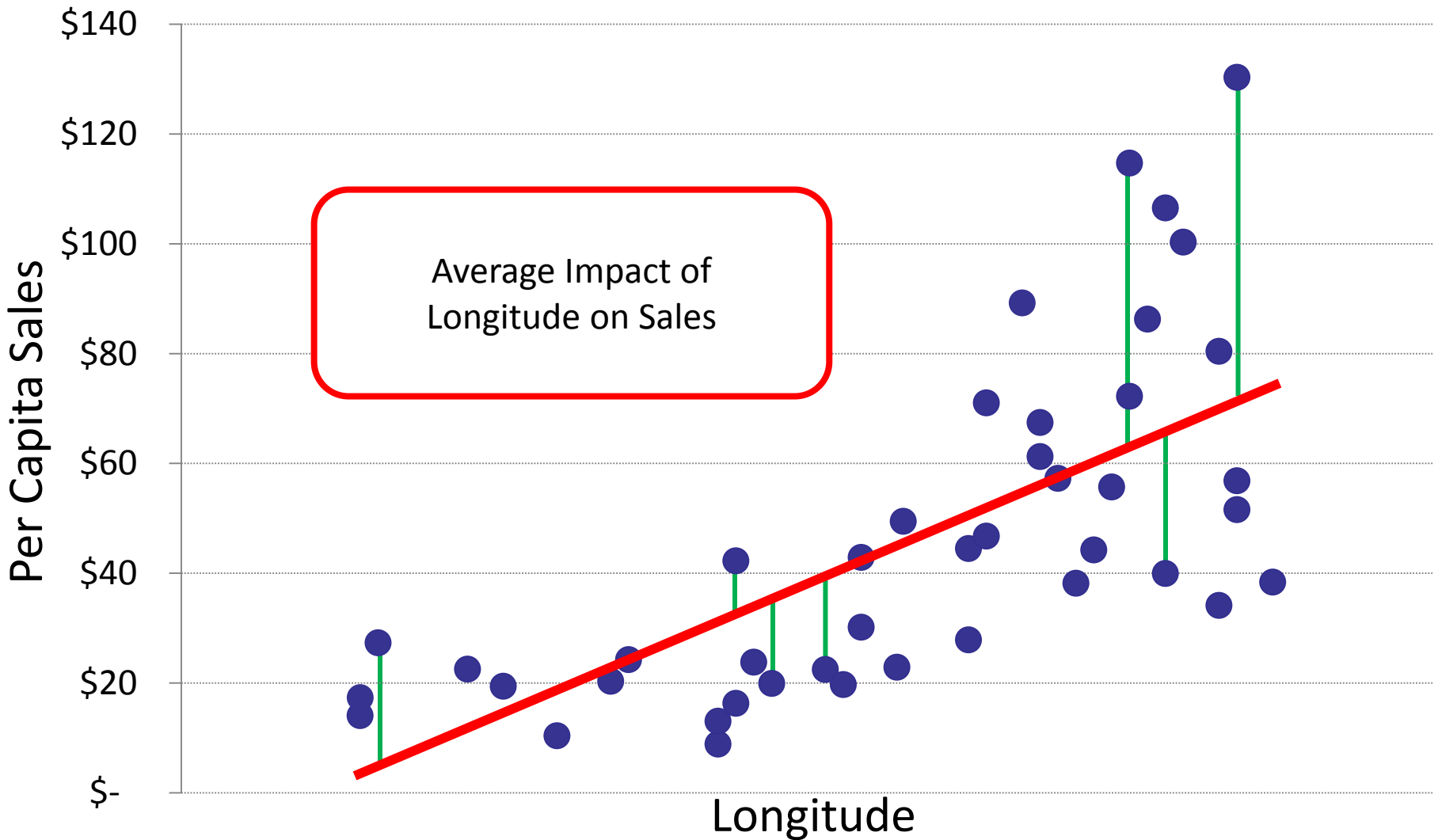


# JLARC Directed to Study Advertising Impact

- Lottery spent **\$2.25 Million** on new beneficiary ad campaign
- Sales increased by **\$19 Million** the next year
- JLARC concluded that advertising had an **8.4 return on investment**



# Linear Regression



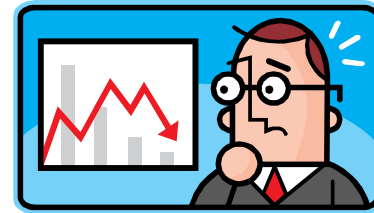
# JLARC's Approach

- Collected weekly ticket sales data for each of Lottery's games
- Collected weekly expenditure data for media buys (television, radio, internet, etc.)
  - ◆ Since advertising is valued based on expected audience, using expenditure dollars worked as a proxy value for reach
  - ◆ Only available for two years (104 observations)
- No apparent relationship between weekly ticket sales and weekly advertising dollars

# JLARC's Approach

- Rounded up other data on likely factors that might influence ticket sales in Washington:

- ◆ Jackpot sizes
- ◆ Employment
- ◆ Consumer Price Index
- ◆ Stock Market (DOW)
- ◆ Gas Prices
- ◆ Weather
- ◆ Holidays
- ◆ Seasons



# Iterations After Iterations

- Each variable added to the analysis can affect the significance of all the other variables
- JLARC tried a myriad of different combinations to discover which variables were consistently significant, regardless of what other variables were in the analysis
  - ◆ (i.e., stepwise regression the hard way)
- Eventually came up with predictive models based on consistently significant variables

# Model 0

- Dependent variable: Sales from all games combined
- Time period: 2 years; 4.5 years; 1 year
- Adjusted R<sup>2</sup>: 0.872; 0.754; 0.945
- Advertising broken out into several variables, tried in several combinations; none were significant
  - ◆ *EXCEPT*: Advertising not related to the beneficiary change showed a significant negative impact in the 1 year analysis
  - ◆ Too few observations to make a conclusion

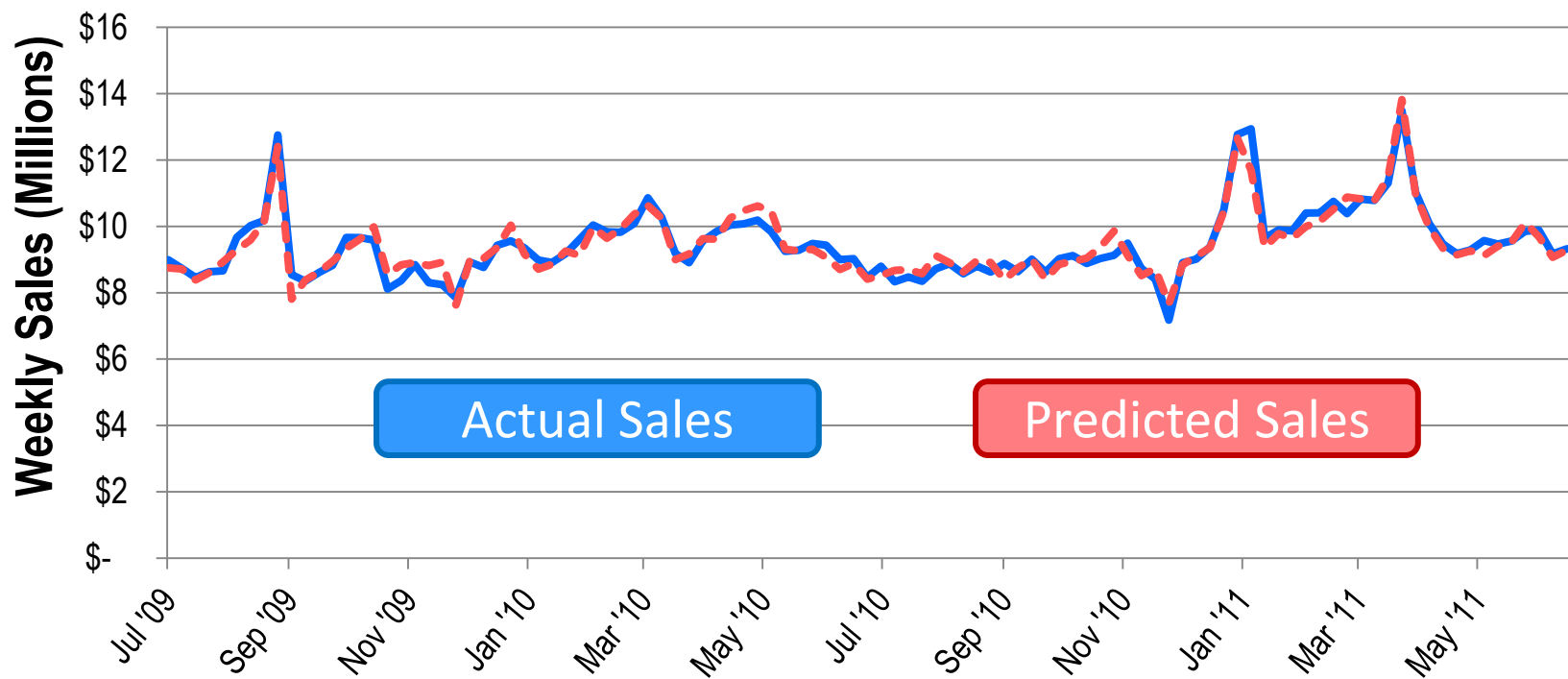
# Model 1

- Dependent variables: Sales from each game separately (since each game is driven by different incentives to play)
- Advertising did not appear to be a significant factor in weekly ticket sales (even if lagged)
- Instead, model was highly predictive of sales just based on jackpot amount, economic indicators, and holidays



# Model 1

Adjusted R<sup>2</sup>: 0.912 for all games recombined



# Paranoia Sets In

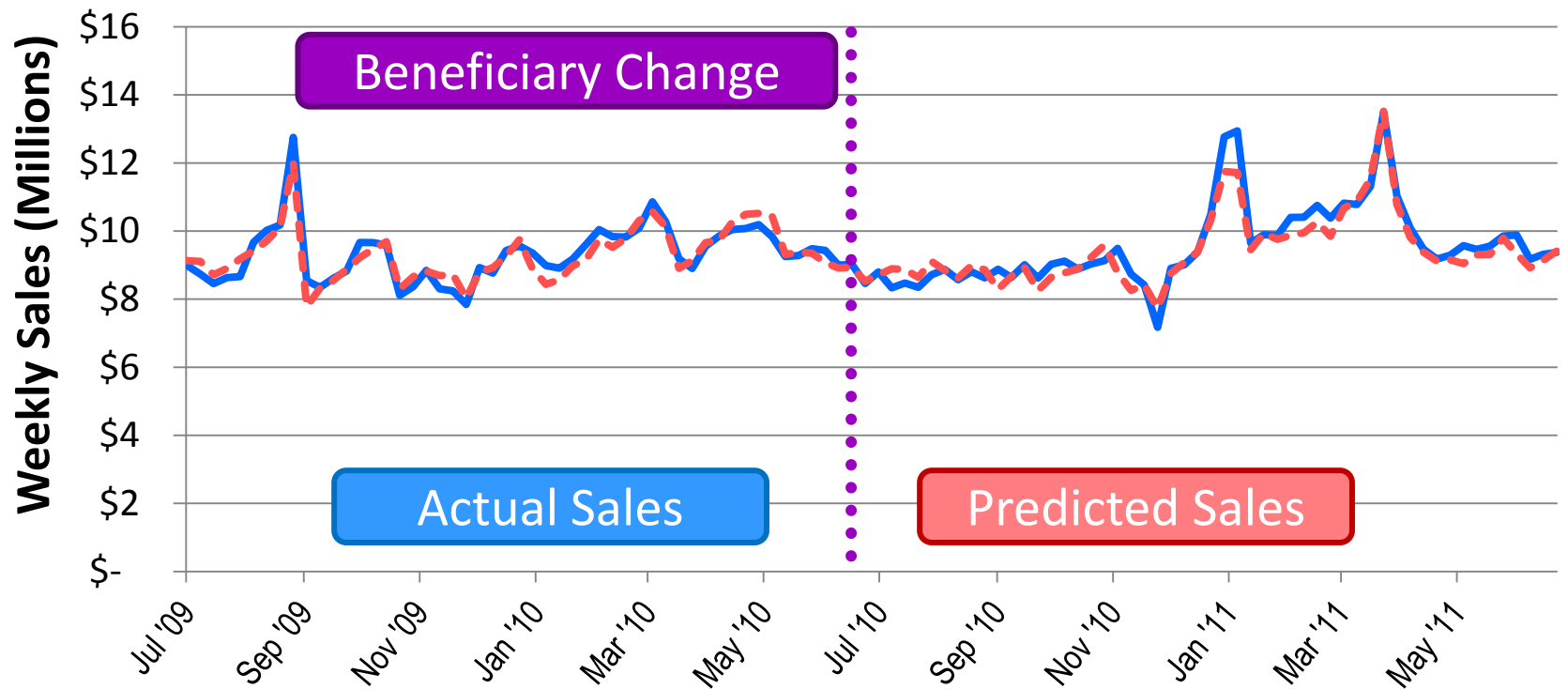
- Model 1 was predictive...maybe too predictive...
- However, it would not be able to recognize the impact of advertising if it was gradual or irregular over time – it assumed that advertising would spur more sales in the week(s) following exposure
  - ◆ What if the cumulative effect of advertising slowly altered people's behavior?
  - ◆ What if a variable that more accurately captured advertising's impact was omitted?
- Another model was needed!

# Model 2

- Dependent variables: Sales from each game separately
- Time Period: Developed from the years prior to FY 2011 to create a baseline expected value for the year after the new beneficiary
- Found actual sales in FY2011 to be \$19.3 Million higher than expected
  - ◆ But on further analysis, increase was limited to Scratch tickets – other games were as expected
  - ◆ Determined that the increase was due to a new Scratch game launched in FY 2011

# Model 2

Adjusted R<sup>2</sup>: 0.893 for all games recombined



# Natural Experiment: Advertising Hiatus

- Lottery stopped almost all media advertising during a three month period
- During this hiatus, ticket sales were slightly lower than the models would have predicted
  - ◆ However, the drop in sales occurs during the first half of the hiatus
  - ◆ Sales in the second half of the hiatus are slightly higher than expected
- So even if drop in sales caused by hiatus, sales returned to “normal” a month before advertising resumed

# Findings

- Couldn't find any direct impact weekly advertising might have had on weekly sales
- Couldn't find any gradual impact beneficiary advertising might have had on sales
- Stopping advertising for three months didn't appear to have any impact on sales

# Limitations and Caveats



- Could not conclude **why** we found no impact:
  - ◆ Poor quality advertising?
  - ◆ Non-responsive public?
  - ◆ Not enough advertising?
  - ◆ Too much advertising?
- Could not definitively rule out that advertising had **some** impact:
  - ◆ Possible that impact is diffuse and cumulative
  - ◆ Possible that impact is “hidden” in other factors
  - ◆ Possible that impact needs more time before becoming noticeable

# Contact Information

## **Peter Heineccius, Project Lead**

peter.heineccius@leg.wa.gov

360-786-5123

## **Stephanie Hoffman, Research Analyst**

stephanie.hoffman@leg.wa.gov

360-786-5297

## **John Woolley, Project Supervisor**

john.woolley@leg.wa.gov

360-786-5184

