Optimal Prize Payout 2020 Study
conducted by Encina Advisors

Presentation to
California State Lottery Commission
March 25, 2021

Background: Prior Study

- In 2009, the Lottery commissioned a study to analyze the relationship between prize payout and sales & profits

- Modelling used 10 years of industry data

- Key findings showed states with higher payout had not only higher sales but greater contributions to their beneficiaries; study projected what would happen if CA boosted its payout

- Report estimated 62% payout maximizes contributions to CA public education

2020 Study

- In 2020, the Lottery commissioned a new study to update the prior analysis and determine the current optimal prize payout rate
  - After a competitive procurement, Dr. Justin Adams of Encina Advisors was awarded the project;
  - He was a partner at Chang & Adams who conducted the prior analysis.

- This study satisfies one of the CSA's recommendations
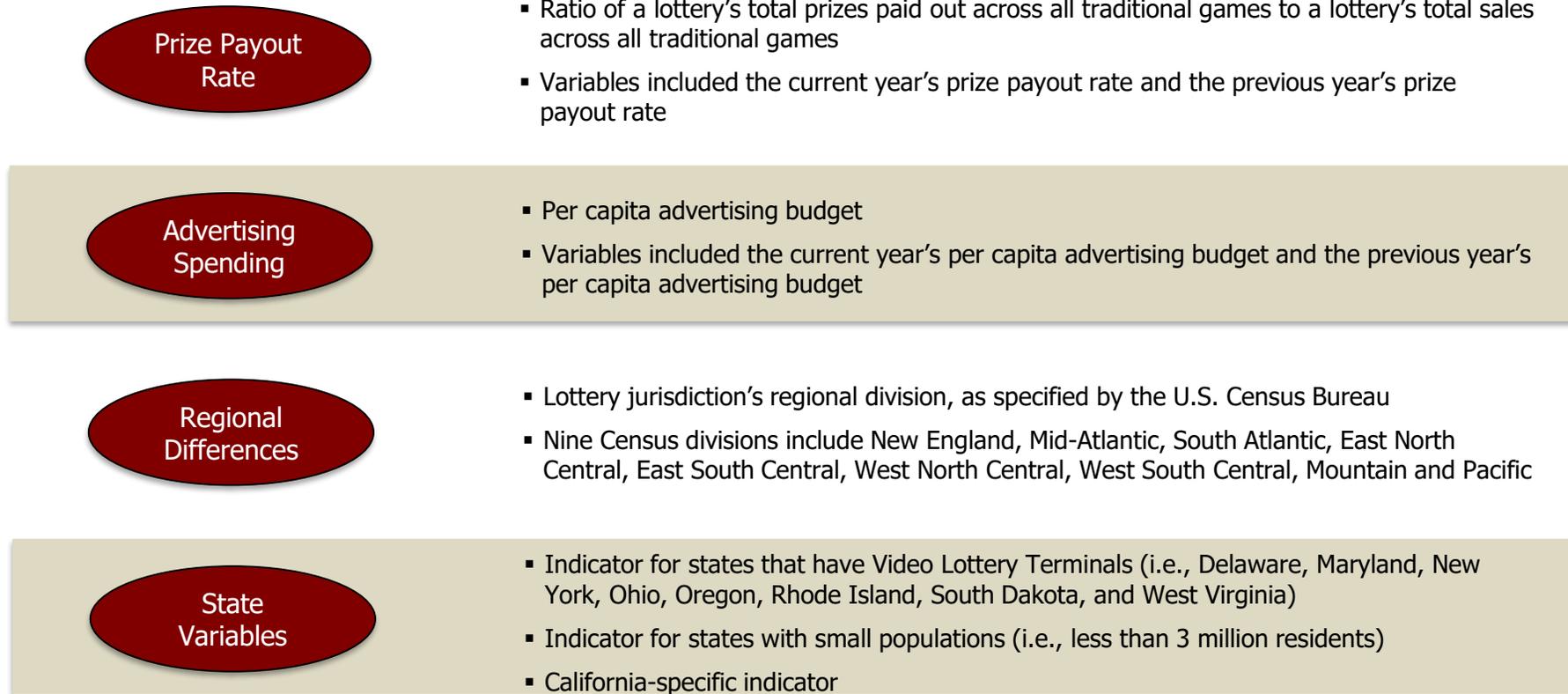
Approach to 2020 Study

- Somewhat similar methodology to prior study

- First step – econometric modeling to estimate impact of various factors including prize payout on per capita sales

- Second – calibrate this national model for CA

- Third – Use CA model to determine where payout maximizes contributions to education

- A new decade of data is available since the last study
  - Lottery provided annual industry data from FY 2007-08 to FY 2018-19
  - Sales data by product; Overall Prize Payout; Advertising budgets
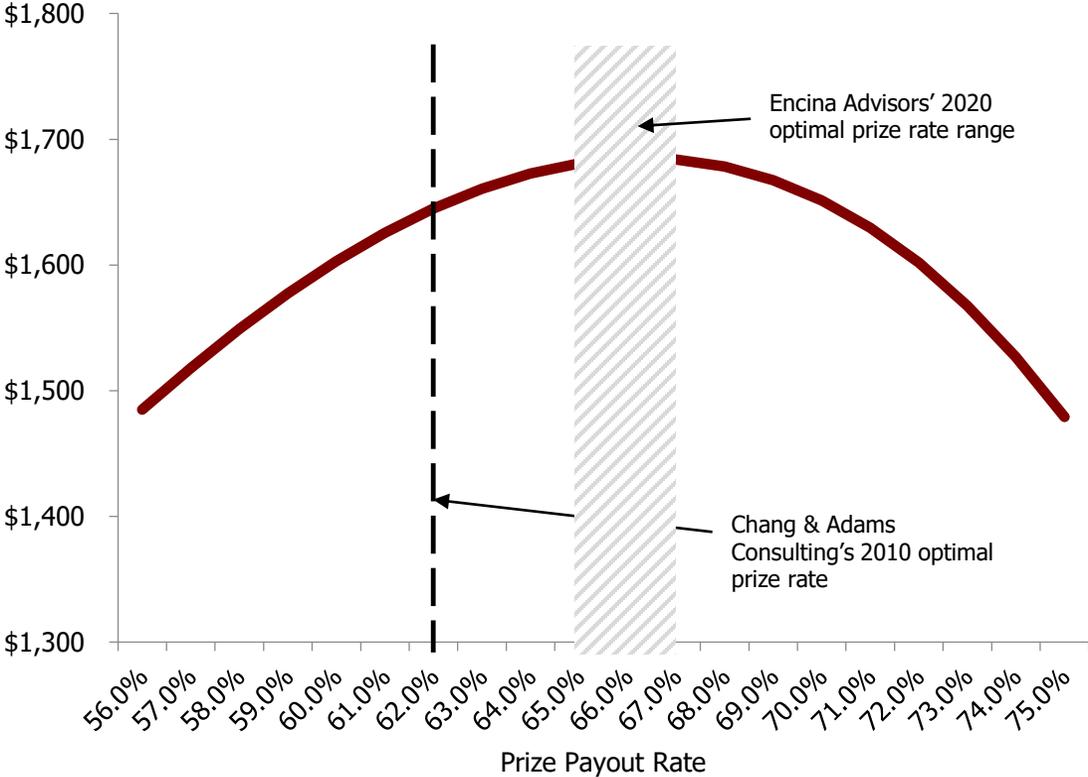 - Data source: La Fleur's Lottery World industry publication

Model Explained 83% of Variation in Per Capita Sales

Figure 2.1: Modeled Factors Influencing Per Capita Lottery Sales

Prize Payout Rate
- Ratio of a lottery's total prizes paid out across all traditional games to a lottery's total sales across all traditional games
- Variables included the current year's prize payout rate and the previous year's prize payout rate

Advertising Spending
- Per capita advertising budget
- Variables included the current year's per capita advertising budget and the previous year's per capita advertising budget

Regional Differences
- Lottery jurisdiction's regional division, as specified by the U.S. Census Bureau
- Nine Census divisions include New England, Mid-Atlantic, South Atlantic, East North Central, East South Central, West North Central, West South Central, Mountain and Pacific

State Variables
- Indicator for states that have Video Lottery Terminals (i.e., Delaware, Maryland, New York, Ohio, Oregon, Rhode Island, South Dakota, and West Virginia)
- Indicator for states with small populations (i.e., less than 3 million residents)
- California-specific indicator

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Range of 65-67% payout would Maximize Contributions to Education

**Estimated Contributions to Education
(in millions)**

Encina Advisors' 2020 optimal prize rate range

Chang & Adams Consulting's 2010 optimal prize rate
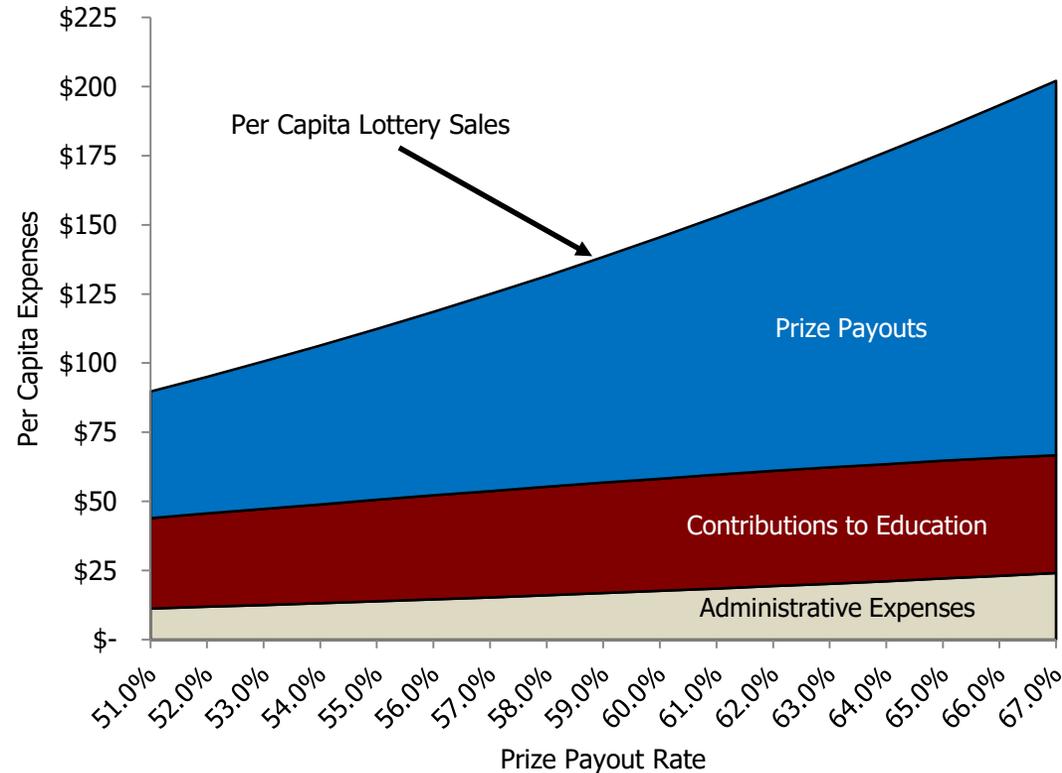
Prize Payout Rate

SOURCE: Encina Advisors

Key Points

- The level of administrative expense affects the optimal prize payout rate since it dictates how much sales revenue is left for education after accounting for prizes

- We used historical Lottery data to estimate the administrative expense rate at different levels of per capita sales, assuming that higher per capita sales are linked to relatively lower administrative expenses

- A prize payout range of 65 to 67 percent maximizes contributions to education, compared to the 62 percent rate recommended by Chang & Adams Consulting

- An optimal prize payout range makes most sense given that

  — The contributions to education are similar under this range

  — Administration expenses as a percentage of total sales can fluctuate because of random factors (e.g., very large draw game jackpots)

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Other Commentary: Proportionality

Per Capita Lottery Sales and Expenses by Prize Payout Rate

SOURCE: Encina Advisors

Key Points

- This figure illustrates graphically how a proportionality requirement would be unrealistic

- It shows the per capita Lottery sales and expenses estimated by our model across different prize payout rates. Expenses are broken down by major category

- Based on the California State Auditor's definition of net revenues, proportionality requires contributions to education (the red area) to grow at the same rate as total sales minus administrative expenses (the blue and red areas combined) as the prize payout rate increases

- However, this cannot happen by definition as well as by design

- Our model estimates that increasing the prize payout rate from 51 percent to 66 percent would result in per capita net revenue growing 117 percent in real terms (i.e., after adjusting for inflation) and per capita contributions to education growing 30 percent in real terms

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Comparing new Optimal Rate with Financials

- Lottery has never exceeded the optimal prize payout through FY 2018-19 – the last year where audited figures are available

- Although the audit of FY 2019-20 financials is not complete, the prize payout rate appears to be 66.5%, which is within the optimal payout range.

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Questions