Three45 Golf Association Study

Lucius Riccio Ph.D.
• Three Main Categories of Pace Factors
• Golfer Behaviors
  – Walking Speed
  – Moving Directly to Own Ball
  – Being Ready to Hit
• Course Conditions
  – Difficulty Factors
  – Hole Combinations
  – Course Set Up
• Management
  – Tee intervals
  – Pace Monitoring
  – Ranger Behavior
  – Par 3 Wave Up
WHY YOU SHOULD READ THIS BOOK:

“This book explains why the pace of play in America is out of control and lays out a comprehensive plan to correct the problem. If you care about golf’s pace of play, this is a must read.”

-Bob Carney
Golf Digest

“Every Club Pro and every Club President, not to mention every golfer who tees it up, should study this book and follow its teachings. Our club follows the Principles and our pace of play is among the best in the country.”

-Brad Worthington
Head Pro, Brooklawn Country Club
President, MET Section, PGA of America

Golf’s Pace of Play Bible
A Practical Guide and Plan for Improving Golf’s Pace of Play And the Science Behind It
Presented By The Three45 Golf Association

Lucius Riccio Ph.D.
Three/45 Golf Association

- Research on Pace of Play
  - Data Analysis Study
  - Simulations
- Implementation
  - Marine Park Golf Course Brooklyn USA
- Optimized Tee Intervals
- Advanced Research on Course Design
- Three/45 Golf Association Program for Improvement
Pace of Play Data Study

- Study of 175 Courses in America
- 40,460 Rounds
- First Study to Use GPS Data
- Data Supplied by GPS Industries
- Time to Play 18 Holes from GPS Data
Three45 Findings

- Average Pace – 4 Hours 17 Minutes

- Compare to Previous Self-Reported Studies:
  - 1989 PGA of America: 4:15
  - 2011 PGA/GCSMAA/CMAA: 4:14
  - 2012 NGF: 4:16
  - PGA Tour TPC Study:
    - Private: 4:10
    - Public: 4:30
Three45 Findings

- **Morning Rounds Faster**
  - Morning Average: 4:02
  - Afternoon Average: 4:21

- **Weekday Rounds Faster**
  - Weekday (M-Th) Average: 4:13
  - Weekend (F-Su) Average: 4:23

- **First Round of the Day Fastest**
  - All Clubs Average: 3:46
Three45 Findings

- 28.5% of all rounds under 4 Hours
- 36.5% over 4:30 with 10.4% over 5 Hours
- 18.8% of courses AVERAGE under 4 hours
- 5 Fastest Courses – Private Clubs
- 5 Slowest – Public Facilities
Three45 Findings

• Length of Course: Mildly Related
• Slope Rating: Not Significantly Related
• BUT Number of Rounds: Statistically Significant Correlation
Implications

Good News/Bad News

• Good News: Average Time Unchanged
  – Bad News: Average Time Unchanged

• Good News: All Courses First Round Fast and Overall 25% of Rounds Under 4 Hours
  – Bad News: All Other Rounds Slower

• Good News: Distance Not the Problem
  – Bad News: Play It Forward May Not Help
Implications

• Pace Is More of a Public Facility Problem
• Private: Shot Waiting Time May Be a Bigger Problem than Overall Time to Play
• Most Important: Success is Possible
  – Some courses have good average times
  – ALL Courses have some fast times
  – Management is perhaps the biggest problem
Do Results Make Sense?

- Compare: Computer Based Simulations
- Input Playing Speed of Groups
  - Walking/Moving Speed
  - Tee/Fairway/Green Clearing Times
- Input Tee Time Interval
- Simulate Full Day
- Groups Play 18 Holes on Hypothetical Course
Simulation Results - Obvious

- Slow Group Sets Pace
- Walking/Moving Pace Important
- Shot/Green Clearing Time Very Important
- Important For Unobstructed Group
Simulation Results - Important

- Not Obvious: **Tee Interval Maybe More Important**
- Individual/Group Behaviors Maybe Less Consequential
- “Hurry Up and Wait” Problem
- “Blame the Group Ahead” Problem
- Confirms Study Results
Other Findings

- Hole to Hole Variation Compounding
- Group to Group Variation Compounding
- More Variation: Longer Play Times
- Variation Doesn’t Cancel – It Compounds
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<td>4:45 5:25</td>
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<td>7 Min</td>
<td>5:15 5:55</td>
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Summary

- **Time to Complete 18 Holes**
- **Tee Interval** | **Green Clearing Time**
  - 3 Min | 4 Min
  - 10 Min | 4:00 | 4:20
  - 9 Min | 4:20 | 4:50
  - 8 Min | 4:45 | 5:20
  - 7 Min | 5:15 | 5:50
Other Findings

• Hole to Hole Variation Compounding
• Group to Group Variation Compounding
• More Variation: Longer Play Times
• Variation Doesn’t Cancel – It Compounds
Example
Marine Park

- Brooklyn, USA
- Pace of Play? Forgetaboutit!
- Full Length Championship Course
- Robert Trent Jones Design
- Links-Style Near the Ocean
Implementation

• Marine Park Golf Course Brooklyn, USA
• Implemented Player Instructions
• Implemented Time Clocks
• Implemented Ranger Training

• Results: Limited/Mixed
• Tee Intervals Unchanged!
Golf Cart Rules

1) Carts must stay on cart paths around tees and greens
2) Do not drive carts in fescue or recently seeded areas
3) Repair all ball marks and divots

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Three/45Golf – Pace of Play

Our goal is to:
Clear the tee box, fairway landing area or green in 3 minutes

Do not take more than 45 seconds to plan, address or hit your shot

Do not look for an errant ball for more than 3 minutes

Do not take more than 45 seconds to putt out, all putts
Results

• Limited/Mixed
• Morning Rounds Showed Improvement
  – Front 9 under 2 hours
  – Overall Under 4:10
• Afternoon Rounds Stayed Long
  – As Course Fills Up
• By 4th Hour Times Creep Up
  – 3 to 4 Minutes Extra per Group
  – By 6th Hour – 4:40 to 4:50
Continue Study

- Collect More Data
- Focus on Specific Holes
- Focus on Green Clearing Times
- Focus on Time of Day
- Test Different Instructions
Summary: Causes

• From Study
  – Tee Intervals

• From Simulations
  – Tee Intervals/Factor Combination

• From Marine Park
  – Tee Intervals and/or Group Pace
Conclusion

• Must Get Tee Interval Right First
• Then Green Clearing Times
• Then Walking Speed/Individual Management
Tee Intervals

• Public Courses Predicament
  – Maximize Revenue
  – Please As Many as Possible (Voters)

• Kimes’/Riccio’s Findings
  – Revenue Maximized at 8 Min Intervals
  – 8 Min Intervals Result in Slow Play
  – 15% Less revenue with 10 Min Intervals
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Model to Optimize Tee Intervals

• Utilizations Highest Mornings/Weekends (85-90% Utilization)
• Lowest Weekday Afternoons (40-60% Utilization)
• Want “Revenue-Neutral” and “Number of Rounds-Neutral” Plan
Model

- Assume “Elasticity”
- Increase Morning Rates
- Reduce Afternoon Rates
- Alternate: Pay More for Morning But Credit for An Afternoon Round
## Marine Park Data

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Utilization Rates – Marine Park

Weighted Average Utilization Rates for Marine Park Golf Course Summer Data (May - July)
Shift of Demand

**Weighted Average Utilization Rates for Marine Park Golf Course Summer Data (May - July)**

![Graph showing weighted average utilization rates for Marine Park Golf Course seasonal data. The graph illustrates the utilization rates across different times of the day, with a peak utilization around midday and a decrease towards 5am and 12am. There is a comparison between original data and shifted demand scenarios.](image)

**Goal:** Determine a revenue-neutral pricing strategy that will allow us to shift demand from peak to off-peak demand times in order to improve quality of play through increased tee time interval
Estimates

- Increase Morning Tee Intervals to 10 Minutes and Fees by 10%
- Increase Afternoon Tee Intervals to 9 Minutes and Drop Fees by 10%
- Balance Load
- Maintain Revenues
- Increase Opportunity for Faster Play
Research on Course/Hole Design

- **Sequence of Holes**
  - Long Par 3s following Short Par 5s

- **Design of Holes**
  - Short Par 4s with Difficult Green Complex
  - Long Par 4s believed to be Reachable
Par 4 Problems

• If Time to Tee and Walk to Fairway is Less than Time to Walk to Green and Hole Out
  – Wait in Fairway
    • True for Short Par 4s with Difficult Green
    • True for “long” Par 4s believed to be Reachable

• If Time to Hit and Walk to Green, Hole Out and Walk to Next Tee is Less than Time to Walk to Tee, Tee, Walk to Fairway, and Hit to Green
  – Wait on Tee