TABLE OF CONTENTS

2017 Bowling Technology Survey Analysis
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>SECTION</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Overview/Response Rates</td>
<td>3</td>
</tr>
<tr>
<td>2. Respondent Profile - USBC</td>
<td>6</td>
</tr>
<tr>
<td>3. Respondent Profile - IBPSIA</td>
<td>13</td>
</tr>
<tr>
<td>4. Respondent Profile - BPAA</td>
<td>20</td>
</tr>
<tr>
<td>5. Survey Results</td>
<td>26</td>
</tr>
<tr>
<td>6. Segmentation by Bowler Average</td>
<td>41</td>
</tr>
</tbody>
</table>
SECTION 1
OVERVIEW/RESPONSE RATES
Earlier this year, USBC Executive Director Chad Murphy discussed how the USBC Equipment Specifications and Certifications Team spent two years researching the bowling ball and how the research is part of a much larger plan that continues in 2017.

USBC set out to talk to those who own the centers, the manufacturers who make the balls, and the consumers who use the balls, to determine what bowling collectively wants and needs.

Victus Advisors was engaged by the United States Bowling Congress in April 2017 to conduct an independent, objective, and research-based analysis of the effects of technology in the sport through surveying members of USBC, IBPSIA (International Bowling Pro Shop and Instructors Association), and BPAA (Bowling Proprietors Association of America).
From April through August 2017, online surveys were distributed via USBC, IBPSIA, and BPAA email databases:

<table>
<thead>
<tr>
<th></th>
<th>Survey Population</th>
<th>Total Survey Responses</th>
<th>Survey Response Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>USBC Members</td>
<td>728,937</td>
<td>18,844</td>
<td>3%</td>
</tr>
<tr>
<td>IBPSIA Certified Pro Shop Operators</td>
<td>458</td>
<td>92</td>
<td>20%</td>
</tr>
<tr>
<td>BPAA Bowling Center Proprietors</td>
<td>2,719</td>
<td>287</td>
<td>11%</td>
</tr>
<tr>
<td><strong>TOTAL:</strong></td>
<td><strong>732,114</strong></td>
<td><strong>19,223</strong></td>
<td><strong>3%</strong></td>
</tr>
</tbody>
</table>

**THEORETICAL MARGIN OF ERROR:**

- USBC: +/- 0.7%
- IBPSIA: +/- 9.1%
- BPAA: +/- 5.5%

*(based upon a 95% confidence interval on questions where opinion is evenly split)*
SECTION 2
RESPONDENT PROFILE - USBC
DEMOGRAPHICS:

- 18,844 respondents
- 74% Male, 26% Female
- 90% over the age of 30
- 27% ages 30 to 49, 63% age 50+
BOWLING PROFILE:
- 63% have bowled for 21+ years
- 42% classify themselves as Average bowlers; 45% classify themselves as Above Average
BOWLING PROFILE (CONT’D):

- 40% bowl more than one time per week
- 55% bowl in 1-5 tournaments per year; 32% bowl in 0 tournaments

What is your bowling average?

More than 220  -  6%
201-220  -  22%
181-200  -  26%
151-180  -  28%
Less than 150  -  18%
BOWLING EQUIPMENT PROFILE
- 47% own between 2-4 balls
- 64% use 1-2 balls when they bowl; 30% use 3-4 balls when they bowl
KNOWLEDGE OF TECHNOLOGY

- 59% rate their knowledge of bowling technology as the Basics or Fair, while 24% rate themselves as Knowledgeable.

- 72% have Minimal, Basics, or Fair knowledge of lane conditions, while 26% consider themselves Knowledgeable.
KNOWLEDGE OF TECHNOLOGY (CONT’D)

- 25% notice changes to lane conditions weekly, 51% notice them each game, and 15% notice them each shot.

- 77% have Minimal, Basics, or Fair knowledge of in regards to the overall flatness of the lane and the importance of it, while 21% consider themselves Knowledgeable.
SECTION 3
RESPONDENT PROFILE - IBPSIA
DEMOGRAPHICS:
- 92 respondents
- 95% Male, 5% Female
- 97% between the ages of 30 and 60+
- 23% ages 30 to 49, 74% age 50
BOWLING PROFILE:
- 91% have bowled for 21+ years
- 79% classify themselves as Above Average bowlers; 17% classify themselves as Elite
BOWLING PROFILE (CONT’D):
- 70% bowl more than one time per week
- 95% bowl in 1+ tournaments per year

What is your bowling average?
More than 220 - 25%
201-220 - 53%
181-200 - 20%
151-180 - 2%
Less than 150 - 0%
IBPSIA SURVEY RESPONDENT PROFILE - BOWLING EQUIPMENT

BOWLING EQUIPMENT PROFILE

- 10% own between 2-4 balls; 90% own 5+ balls (44% own 13+ balls)
- 19% use 1-2 balls when they bowl; 81% use 3+ balls when they bowl
KNOWLEDGE OF TECHNOLOGY

- 55% consider their expertise of bowling technology to be Knowledgeable, while 41% rate themselves as Expert

- 69% have Knowledgeable expertise of lane conditions, while 25% consider themselves Expert
KNOWLEDGE OF TECHNOLOGY (CONT’D)

- 48% notice changes to lane conditions each game, and 50% notice them each shot

- 64% have Knowledgeable expertise in regards to the overall flatness of the lane and the importance of it, while 26% consider themselves Expert
SECTION 4
RESPONDENT PROFILE - BPAA
DEMOGRAPHICS:
- 287 respondent
- 84% Male, 16% Female
- 60% between the ages of 30 and 60
- 4% less than 30, 36% age 60+
On average, the **BOWLING CENTERS** of BPAA survey respondents:

- Have 26 lanes per center
- Host 19 certified leagues each week
- Host 7 tournaments each year

It should also be noted that the average for the league and tournament data is much higher than the median, indicating that several busier centers are skewing the average higher.

<table>
<thead>
<tr>
<th>Bowling Center Information</th>
<th>Average</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>How many lanes are in your center?</td>
<td>25.9</td>
<td>24</td>
</tr>
<tr>
<td>Approximately, how many certified leagues does your center host each week?</td>
<td>18.7</td>
<td>9</td>
</tr>
<tr>
<td>Approximately, how many tournaments does your center host each year?</td>
<td>7.3</td>
<td>4</td>
</tr>
</tbody>
</table>
BOWLING EQUIPMENT PROFILE
- 68% own between 2-8 balls
- 95% use 4 or less balls when they bowl
KNOWLEDGE OF TECHNOLOGY & CONDITIONS

- 49% consider their expertise of bowling ball technology to be Knowledgeable or Expert

- 66% consider themselves Knowledgeable or Expert when it comes to today’s lane conditions
KNOWLEDGE OF TECHNOLOGY & CONDITIONS

- 59% notice changes to lane conditions each game, and 18% notice them each shot

- 52% have Knowledgeable expertise in regards to the overall flatness of the lane and the importance of it, while another 10% consider themselves Expert
SECTION 5
SURVEY RESULTS
On a 5-point scale, where 5 = Very Satisfied and 1 = Very Dissatisfied, survey respondents were asked to indicate their overall satisfaction with the quality of bowling technology.

Overall satisfaction with bowling technology skews high with USBC, IBPSIA, and BPAA members, with 60-63% having above average satisfaction, and only 7-13% having below average satisfaction.
On a 5-point scale, where 5 = Strongly Agree and 1 = Strongly Disagree, survey respondents were asked to evaluate several statements about the current state of bowling technology.

The majority of respondents agreed that ensuring certified lanes are as flat as possible is important, USBC approved bowling balls are held to specifications, the flatness of certified lanes affects the averages bowled in USBC leagues, and centers should be evaluated for difficulty.

The opinion that respondents most disagreed on is if all USBC-certified lanes should play the same from lane to lane. USBC Members agree with that statement, whereas IBPSIA/BPAA disagree.
The majority of respondents agreed that new lane machine technology has affected the sport of bowling in positive ways. Disagreement was more widespread regarding lane conditions in USBC leagues/tournaments, and bowling on Open Championships-like vs. forgiving conditions.
There was a generally positive or very positive attitude amongst respondents regarding the overall improvements to bowling technology over the last 30 years (ranging from 57% to 75% Positive/Very Positive).

Overall, the improvements due to bowling technology (balls, oils, etc.) over the past 30 years have been:
Respondents felt that the single greatest factor contributing to high scoring is lane conditions (44% to 55%), followed by bowling balls (36% to 38%).

The majority of respondents who selected “Other” specified that the skill and talent level of the bowler is the greatest factor that contributes to high scores.
The majority of respondents feel that league lane conditions should be standard (54% to 65%).

When asked about tournament lane conditions, an even stronger majority of respondents felt that they should be challenging or very challenging (72% to 87%).
The majority of respondents from both USBC and IBPSIA feel that bowling balls today hook enough (62% and 52% respectively), however BPAA members are split more evenly between hook enough, hook too much, or hook way too much.
Many respondents in the USBC, IBPSIA, and BPAA surveys are indifferent about two-handed bowling (49%, 36%, and 40% respectively). IBPSIA members tend to believe more strongly than USBC and BPAA members that that two-handed bowling is good or absolutely good for the sport (42%).
Competition is the primary reason (67%) why IBPSIA member choose to bowl. Whereas USBC and BPAA members’ motivations are more evenly distributed across Competition, Recreation, and Social reasons.
A plurality of USBC and BPAA members prefer the lane conditions of today over previous eras (49% and 38%, respectively).

IBPSIA members, however, have a much more varied response, and actually favored the lane conditions of the 1990s (29% of respondents).
The majority of USBC respondents (60%) and a plurality of IBPSIA and BPAA respondents (45% and 34%, respectively) prefer the bowling equipment of Today over previous eras.
A majority of each respondent group (USBC, IBPSIA, and BPAA) prefer the lane surfaces of Today (55%, 52%, and 59%, respectively).
A majority of USBC members (51%) prefer the scoring pace of Today, while a plurality of IBPSIA members (38%) actually favored the pace of the 1990’s. BPAA members were more divided than USBC and IBPSIA, with 27% preferring Today, 23% preferring the 1980’s, and 20% preferring the 1990’s.
Pluralities of each respondent group feel that the most skilled bowlers existed in the 1970s (36% of IBPSIA and 43% of BPAA) and Today (33% of USBC).

Which era had bowlers with the highest level of skill?
SECTION 6
SEGMENTATION BY BOWLER AVERAGE
Note: For this segmentation analysis, Victus Advisors combined the respondent pools of USBC, IBPSIA, and BPAA members, and then segmented their scores by five different ranges of bowler average.

There is a strong correlation between changes in bowling average and the level of disagreement with the following statements: “New bowling ball coverstocks have changed the game in positive ways”, “Consistent scoring from center to center is important”, and “All USBC-certified lanes should play the same from lane to lane”.

![Graph showing correlation between bowling average and levels of disagreement with various statements.](image-url)

- USBC approved bowling balls are held to specifications
- Specifications on bowling balls are outdated
- New bowling ball coverstocks have changed the game in positive ways
- Consistent scoring from center to center is important
- Centers should be evaluated for difficulty
- USBC-certified lanes are regularly checked to meet specifications
- Ensuring certified lanes are as flat as possible is important
- All USBC-certified lanes should play the same from lane to lane
- The flatness of certified lanes affects the averages bowled in USBC leagues
There is a strong correlation between changes in bowling average and the level of disagreement regarding the following statements: “I’d rather bowl on a more forgiving condition that allows for higher scores”, “I’d rather bowl on a more challenging condition where execution is key”, “Improvements in bowling technology have affected the sport of bowling negatively”, and “I would like to see specifications put in place to lower scoring”. 
Most respondents, regardless of bowling average, feel that the overall improvements due to bowling technology over the last 30 years have been positive. However, there tend to be more negative sentiments regarding bowling technology amongst bowlers with higher averages.

Overall, the improvements due to bowling technology (balls, oils, etc.) over the last 30 years have been:
Bowlers with lower averages tend to believe that the single greatest factor that contributes to high scoring is lane condition while bowlers with higher averages feel that bowling balls are a slightly greater factor than lane conditions.
The majority of respondents within all scoring ranges felt that league lane conditions need to be “Standard”. A higher percentage of bowlers with an average over 180 prefer challenging conditions relative to bowlers with an average less than 180, however they were still the minority even among bowlers with higher averages.
The majority of bowlers with averages over 150 feel that tournament lane conditions need to be challenging. However, bowlers with an average less than 150 slightly prefer standard conditions.
The majority of respondents with averages below 220, and a plurality of those with a 220+ average, feel that bowling balls today “hook enough”. However, as bowlers’ averages increase, there is an increased likelihood to feel that bowling balls hook too much or hook way too much.
Most respondents are indifferent toward two-handed bowling, regardless of their bowling average.
There is a strong correlation between bowlers with higher averages and their motivation for “Competition” (70% of bowlers with a 220+ average). Bowlers with a lower average are more inclined to bowl for “Recreation” or “Social” purposes (36% and 40% respectively for bowlers below <150).
A majority of bowlers with an average of 180 or less prefer the lane conditions of “Today”, while majorities of bowlers with a higher average prefer the conditions of a previous era (although a plurality prefer Today).
A majority of bowlers with an average below 200 prefer the equipment of “Today”, while more than 60% of bowlers with a 220+ average prefer the bowling equipment of a past decade.
A majority of all respondents prefer the lane surfaces of “Today” regardless of their bowling average. Most bowlers have perceived a steady improvement each decade in the lane surfaces.
There is a strong preference for the scoring pace of Today amongst bowlers with lower averages, including 74% of bowlers with an average less than 150. Bowlers with an average over 220 actually have more of a preference for the scoring pace of the 1980’s and 1990’s (25% and 28%) than Today (21%).
Bowlers with higher averages are more likely to believe that previous decades had bowlers with the highest level of skill (32% of bowlers with an average over 220 selected the 1970’s and 26% selected the 1980’s, whereas 24% selected Today). A majority of bowlers with an average below 150 (51%) selected Today’s bowlers as the highest level of skill.