Viewership and the WNBA

Meagan Best, Sofia Gibson, Nevaeh Hodges,
Luke Sherrill, Slater Sparks

Project Framing

Problem:

- The WNBA, since its creation, has never been profitable.
- Projected to lose $40 million during the 2024 season
- Organization kept afloat by NBA revenue

Opportunity:

- New found popularity of stars like Angel Reese and Caitlin Clark have led the WNBA to rethink profitability
- Opportunity to generate this popularity into increased viewership and increased ad revenue

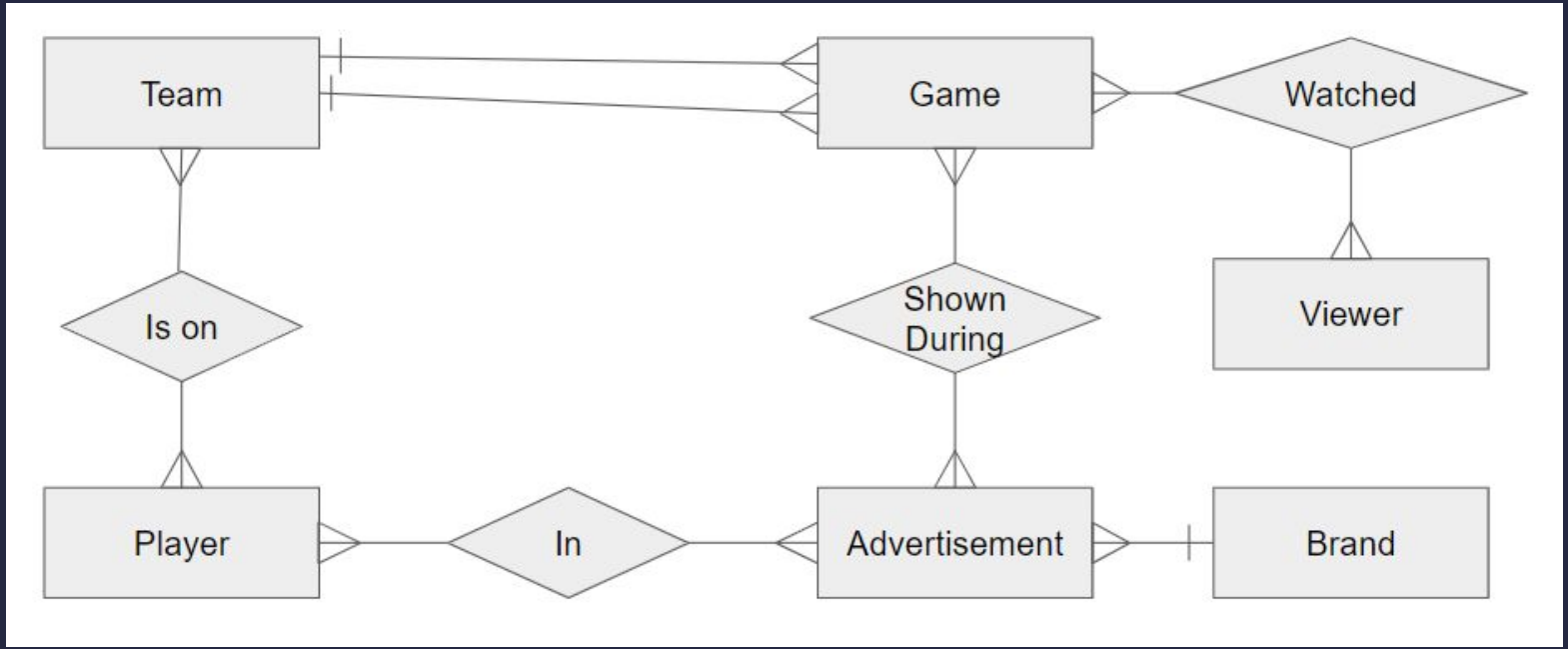
Our Proposal

Using a database, the WNBA can analyze viewer and advertisement demographics to increase viewership and improve the effectiveness of advertising to increase revenue.

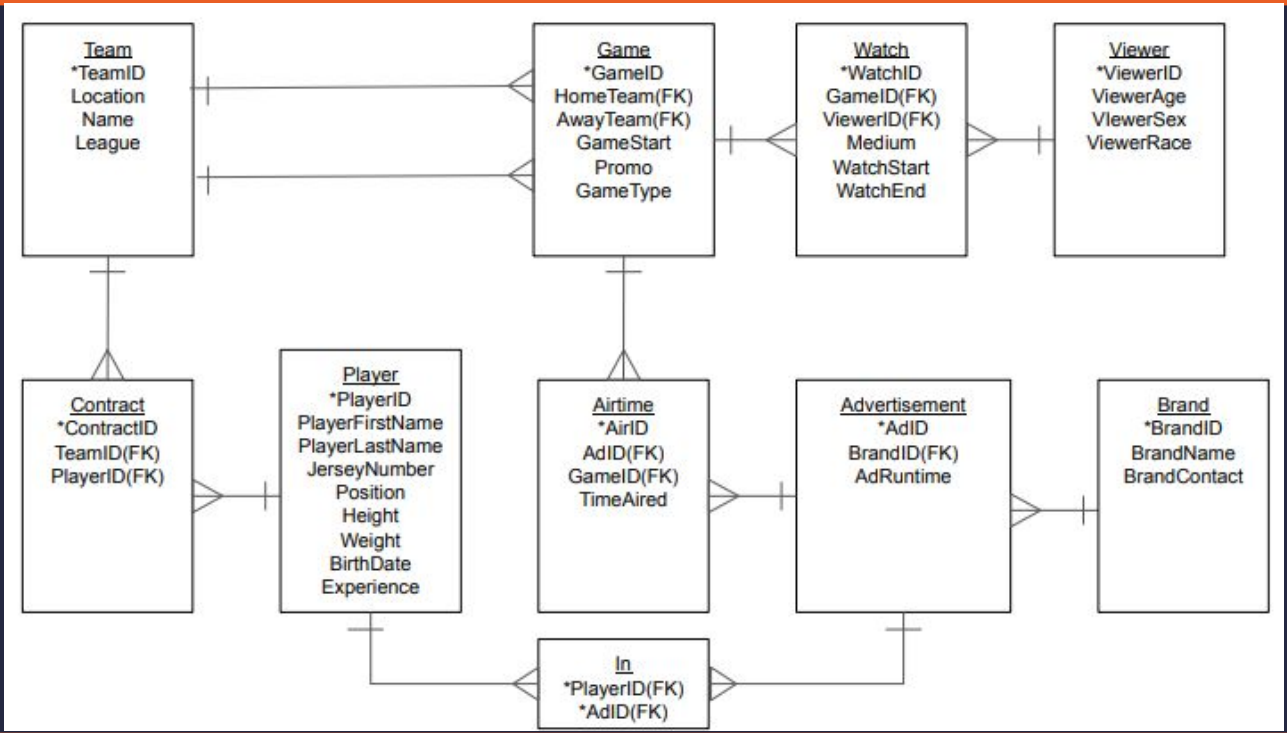
- Reevaluate the WNBA's target audience
- Track team and player popularity
- Track advertisement popularity
- Track seasonal trends in viewership

The results of this analysis can help the WNBA advertise more accurately and efficiently to increase profitability.

Conceptual ERD



Physical ERD



Data Sources

All our data about Players and Teams comes from basketball-reference.com

Numeric Data was created randomly using Excel function (RANDBETWEEN)

Qualitative Data, such as Viewer Race, was randomly selected from a bank of options using CHOOSE(RANDBETWEEN()).

- Sex: M/F
- ViewerRace: All race options from US Census
- GameType: Playoff, Regular Season, Preseason
- ETC.

When matching two foreign keys, we also randomly selected them

Report 1: Viewer Demographic

```
SELECT
    Game.GameType,
Viewer.ViewerSex,Viewer.ViewerRace,
COUNT(DISTINCT Watch.ViewerID) AS
ViewerCount
FROM WNBA.Game, WNBA.Watch,
WNBA.Viewer
WHERE Game.GameID = Watch.GameID
  AND Watch.ViewerID = Viewer.ViewerID
GROUP BY Game.GameType,
Viewer.ViewerSex, Viewer.ViewerRace;
```

The purpose of this query analyzes the demographic breakdown of viewers for different types of games. Identify the most engaged demographic groups and adjust marketing strategies accordingly.

Report 1: Output

Row	GameType	ViewerSex	ViewerRace	ViewerCount
1	Playoffs	F	White alone, non-Hispanic	15
2	Playoffs	F	American Indian and Alaska Native alone, non-...	10
3	Playoffs	F	Hispanic	15
4	Playoffs	F	Some Other Race alone, non-Hispanic	6
5	Playoffs	F	Native Hawaiian and Other Pacific Islander alone, non-Hispanic	19
6	Playoffs	M	White alone, non-Hispanic	11
7	Playoffs	M	Hispanic	10
8	Playoffs	M	American Indian and Alaska Native alone, non-...	9

Results per page: 50 1 – 48 of 48

Report 2: Team Popularity

```
SELECT
    Team.Name AS TeamName,
COUNT(DISTINCT Watch.ViewerID) AS
ViewerCount
FROM WNBA.Watch, WNBA.Game,
WNBA.Team
WHERE Watch.GameID = Game.GameID
  AND (Team.TeamID = Game.HomeTeam
OR Team.TeamID = Game.AwayTeam)
GROUP BY TeamName
ORDER BY ViewerCount DESC;
```

The purpose of this query is to identify the teams with the largest viewer base to prioritize for sponsorships or media coverage. The results of this query portray the highest number of viewers for games that are aired, grouped by team.

Report 2: Output

Row	TeamName	ViewerCount
1	Sun	55
2	Mystics	53
3	Mercury	53
4	Fever	52
5	Liberty	51
6	Wings	51
7	Storm	46
8	Lynx	46
9	Dream	45
10	Sky	43

Results per page: 50 1 – 42 of 42

Report 3: Effectiveness of Advertisements

```
SELECT
   ad.AdID,
   b.BrandName,
   COUNT(DISTINCT CONCAT(ad.AdID, v.ViewerID))
AS total_viewers
FROM
   `WNBA.Airtime` AS a
JOIN
   `WNBA.Advertisement` AS ad ON a.AdID =
ad.AdID
JOIN
   `WNBA.Brand` AS b ON ad.BrandID = b.BrandID
JOIN
   `WNBA.Watch` AS w ON a.GameID = w.GameID
JOIN
   `WNBA.Viewer` AS v ON w.ViewerID = v.ViewerID
```

```
LEFT JOIN
   `WNBA.In` AS i ON i.AdID = ad.AdID
LEFT JOIN
   `WNBA.Player` AS p ON i.PlayerID =
p.PlayerID
WHERE
   w.WatchStart < a.TimeAired
   AND
   w.WatchEnd > a.TimeAired
GROUP BY
   ad.AdID, b.BrandName
ORDER BY
   total_viewers DESC;
```

Report 3 Output

Row	AdID	BrandName	total_viewers
1	AD76	Puma	7
2	AD18	Under Armour	6
3	AD238	Ticketmaster	6
4	AD137	Metlife	5
5	AD232	Meta	5
6	AD117	Delta Airlines	4
7	AD209	Delta Airlines	4
8	AD278	Metlife	4
9	AD281	Under Armour	4

The purpose of this query is to make clear how many viewers each advertisement had when it was aired. This will highlight clear trends and habits of those that watch these basketball games.

Report 4: Viewership Over Time

```
SELECT
   EXTRACT(MONTH FROM Game.GameStart) AS
Month,
   COUNT(DISTINCT Watch.ViewerID) AS Viewer
Count
FROM
   WNBA.Game, WNBA.Watch
WHERE
   Game.GameID = Watch.GameID
GROUP BY
   EXTRACT(MONTH FROM Game.GameStart)
ORDER BY
   Month ASC;
```

The purpose of this query is to analyze how viewership trends change over different months or seasons. The results of this query show the peak viewership periods to align game schedules and marketing campaigns.

Report 4 Output

Row	Month	ViewerCount
1	5	106
2	6	91
3	7	98
4	8	93
5	9	100
6	10	1

Report 5: Best Ad Placement Times

```
SELECT
   a.TimeAired,
   COUNT(w.WatchID) AS total_viewers
FROM
   `WNBA.Airtime` AS a
INNER JOIN
   `WNBA.Watch` AS w
ON
   a.GameID = w.GameID
WHERE
   w.WatchStart <= a.TimeAired
   AND
   w.WatchEnd >= a.TimeAired
GROUP BY
   a.TimeAired
ORDER BY
   total_viewers DESC;
```

The purpose of this query is to show the optimal time to air ads to maximize viewership. The results of this query show the total viewers for each ad when it airs in descending order, therefore you can see what times provide the highest number of viewers.

Report 5 Output

Row	TimeAired	total_viewers
1	01:12:00	8
2	01:48:00	7
3	00:58:00	7
4	01:00:00	6
5	01:06:00	6
6	02:08:00	6
7	01:40:00	6
8	01:05:00	5
9	02:12:00	5

Report 6: Top Performing Ads by Athlete

```
SELECT
    CONCAT(p.PlayerFirstName, ' ', p.PlayerLastName) AS
PlayerName,
    COUNT(DISTINCT ad.AdID) AS NumAds,
    COUNT(DISTINCT CONCAT(ad.AdID, v.ViewerID)) AS
TotalAdViews,
    ROUND(COUNT(DISTINCT CONCAT(ad.AdID,
v.ViewerID)) / COUNT(DISTINCT ad.AdID), 2) AS
ViewsPerAd
FROM
    `WNBA.Airtime` AS a
JOIN
    `WNBA.Advertisement` AS ad ON a.AdID = ad.AdID
JOIN
    `WNBA.Watch` AS w ON a.GameID = w.GameID
JOIN
    `WNBA.Viewer` AS v ON w.ViewerID = v.ViewerID
```

```
LEFT JOIN
    `WNBA.In` AS i ON i.AdID = ad.AdID
LEFT JOIN
    `WNBA.Player` AS p ON i.PlayerID = p.PlayerID
WHERE
    w.WatchStart < a.TimeAired
    AND
    w.WatchEnd > a.TimeAired
    AND
    p.PlayerID IS NOT NULL  -- Exclude rows where
there is no associated player
GROUP BY
    p.PlayerID, p.PlayerFirstName,
p.PlayerLastName
ORDER BY
    ViewsPerAd DESC;
```

Report 6 Continued

Row	PlayerName	NumAds	TotalAdViews	ViewsPerAd
1	Dru Smith	1	7	7.0
2	Zeke Nnaji	1	6	6.0
3	Mason Plumlee	1	5	5.0
4	LeBron James	1	5	5.0
5	Tyrese Haliburton	1	4	4.0
6	Micah Potter	1	4	4.0
7	Tari Eason	1	4	4.0
8	Amen Thompson	1	4	4.0
9	Leonard Miller	1	4	4.0

The purpose of this query is to analyze the effectiveness of featuring a specific player in an advertisement. This will aid companies in determining what players to feature in advertisements airing during games.

Limitations

1. **Reliability of Data**: The project relies on synthetic data generated through random number generators and AI tools like ChatGPT, which may not accurately capture real-world viewership trends for WNBA games. This can impact the validity and applicability of insights, such as identifying key demographics or optimal advertisement times.

2. **Assumptions about the WNBA:** We assumed each game had a home and away team, when in reality there can be special games played at a neutral site, such as the NBA Vegas tournament. We also assumed that all viewership happens live, which is not the case. Many viewers watch recording or highlights on online platforms such as YouTube. We also assumed that the NBA and WNBA internally operated identically, but in reality there may be some differences that could cause data storing issues (Previously used Quarters vs Halves, etc.)

3. **Ad Viewership Variable:** Measuring ad viewership is complex due to various platforms (televised vs in-stadium ads) as well as whether or not a viewer was actually engaged in the advertisement. Figuring out a reliable mechanism for measuring ad engagement can be a project in itself- to simplify we utilized viewership by a String amount however it could be done in a more precise way.

Next Steps (Besides using Real Data)

1. **Use APIs to Continuously Update:** By using APIs, we can have continuously up to date information for our database, done automatically.

2. **Incorporate Player Stats**: By having up to date player stats for the current season, and averages from previous seasons, you could make an algorithm to predict the most popular players to advertise with.

3. **Track WNBA Advertisements Outside of Games**: Being able to track ads for the WNBA played during NBA games or elsewhere, such as during SportsCenter, could aid in optimization to increase viewership, thereby increasing profitability as well.