

A black and white photograph of the New York Stock Exchange building facade, featuring large classical columns and the inscription 'NEW YORK STOCK EXCHANGE' at the top. The image is dark, with the text overlaid in white.

# Business Data Management NBA Database

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Visualization

A low-angle, black and white photograph of several modern skyscrapers reaching towards a dark, cloudy sky. The perspective creates a sense of height and architectural scale. A white rectangular frame is centered over the image, containing the text.

# 01 Dataset

# The Dataset

The dataset spans from 1951 to 2023, and we selected the year 2009 (corresponding to the 2008-09 season) for comparative analysis.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1	Year	Season Start Yr	Season Type	Player I	Player	Games Play	Minutes Play	FG M	FG Att	FG %	3-Pt FG M	3-Pt FG Att	3-Pt FG %	FT M	FT Att	FT %	Offensive Rebound	Defensive Rebound	Rebound	Assis	Steal	Block	Turnover	Personal Fou	Points Score	Efficiency	AST/TO	STL/TO
2	1951-52	1951	Regular Season	76056	Paul Arizin	66	2939	548	1222	0.448				578	707	0.818			745	170				250	1674	1786		
3	1951-52	1951	Regular Season	600012	George Mikan	64	2572	545	1414	0.385				433	555	0.78			866	194				286	1533	1592		
4	1951-52	1951	Regular Season	600003	Bob Cousy	66	2681	512	1388	0.369				409	506	0.808			421	441				190	1433	1322		
5	1951-52	1951	Regular Season	77429	Ed Macauley	66	2631	384	888	0.432				496	621	0.799			529	232				174	1264	1396		
6	1951-52	1951	Regular Season	76514	Bob Davies	65	2394	379	990	0.383				294	379	0.776			189	390				269	1052	935		
7	1951-52	1951	Regular Season	76250	Frank Brian	66	2672	342	972	0.352				367	433	0.848			232	233				220	1051	820		
8	1951-52	1951	Regular Season	76744	Larry Foust	66	2615	390	989	0.394				267	394	0.678			880	200				245	1047	1401		
9	1951-52	1951	Regular Season	78453	Bobby Wanzer	66	2498	328	772	0.425				377	417	0.904			333	262				201	1033	1144		
10	1951-52	1951	Regular Season	77967	Arnie Risen	66	2396	365	926	0.394				302	431	0.701			841	150				258	1032	1333		
11	1951-52	1951	Regular Season	77593	Vern Mikkelsen	66	2345	363	866	0.419				283	372	0.761			681	180				282	1009	1278		
12	1951-52	1951	Regular Season	77867	Jim Pollard	65	2545	411	1155	0.356				183	260	0.704			593	234				199	1005	1011		
13	1951-52	1951	Regular Season	78094	Freddie Scolari	64	2242	280	967	0.334				353	423	0.835			214	303				213	933	803		
14	1951-52	1951	Regular Season	78638	Max Zaslofsky	66	2113	322	958	0.336				287	380	0.755			184	156				183	931	852		
15	1951-52	1951	Regular Season	76764	Joe Fuiks	61	1904	336	1078	0.312				250	303	0.825			368	123				255	922	618		
16	1951-52	1951	Regular Season	76838	Joe Graboski	66	2439	320	827	0.387				264	396	0.667			655	130				254	904	1050		
17	1951-52	1951	Regular Season	78075	Fred Schaus	62	2581	281	778	0.361				310	372	0.833			434	247				221	872	994		
18	1951-52	1951	Regular Season	78076	Dolph Schayes	63	2004	263	740	0.355				342	424	0.807			773	182				213	868	1264		
19	1951-52	1951	Regular Season	77999	Red Rocha	66	2543	300	749	0.401				254	330	0.77			549	128				249	854	1006		
20	1951-52	1951	Regular Season	76110	Leo Barnhorst	66	2344	349	897	0.389				122	187	0.652			430	255				196	820	892		
21	1951-52	1951	Regular Season	77853	Andy Philip	66	2935	279	762	0.366				232	308	0.753			434	539				254	790	1204		
22	1951-52	1951	Regular Season	76102	Don Barksdale	62	2054	272	804	0.338				237	343	0.691			601	137				230	781	881		
23	1951-52	1951	Regular Season	77597	Stan Miazek	66	2174	258	707	0.365				263	372	0.707			639	148				257	779	1000		
24	1951-52	1951	Regular Season	77778	Don Otten	64	1789	222	636	0.349				323	418	0.773			435	123				218	767	816		
25	1951-52	1951	Regular Season	76773	Harry Gallatin	66	1931	233	527	0.442				275	341	0.806			661	115				223	741	1157		
26	1951-52	1951	Regular Season	76636	Thomas Eddleman	65	1893	269	809	0.333				202	329	0.614			267	134				249	740	474		
27	1951-52	1951	Regular Season	76414	Jack Coleman	66	2606	308	742	0.415				120	169	0.71			692	208				218	736	1153		
28	1951-52	1951	Regular Season	77572	Dick Mehen	65	2294	293	824	0.356				117	167	0.701			282	171				209	703	575		
29	1951-52	1951	Regular Season	78126	Bill Sharman	63	1389	244	628	0.389				183	213	0.859			221	151				181	671	629		
30	1951-52	1951	Regular Season	78447	Paul Walther	55	1903	220	549	0.401				231	308	0.75			246	137				171	671	648		
31	1951-52	1951	Regular Season	77268	George King	66	1889	235	579	0.406				188	264	0.712			274	244				199	658	756		
32	1951-52	1951	Regular Season	76404	Nat Clifton	62	1101	244	729	0.335				170	256	0.664			731	209				227	608	1027		
33	1951-52	1951	Regular Season	77132	Arnie Johnson	66	2158	178	411	0.433				301	387	0.778			404	182				259	657	924		
34	1951-52	1951	Regular Season	76214	Don Boven	66	1982	200	668	0.299				256	350	0.731			336	177				271	656	607		
35	1951-52	1951	Regular Season	77347	Bob Lavoy	63	1829	240	604	0.397				168	223	0.753			479	107				210	648	815		
36	1951-52	1951	Regular Season	78153	Connie Simmons	66	1558	227	600	0.378				175	254	0.689			471	121				214	629	769		
37	1951-52	1951	Regular Season	77480	Slater Martin	66	2480	237	632	0.375				142	190	0.747			228	249				226	616	650		
38	1951-52	1951	Regular Season	78359	Bill Toshoff	65	2055	213	651	0.327				182	221	0.824			216	222				204	608	569		
39	1951-52	1951	Regular Season	77089	Mel Hutchins	66	2618	231	633	0.365				145	225	0.644			880	190				192	607	1195		
40	1951-52	1951	Regular Season	77519	Frank Kudella	66	2593	204	614	0.332				158	258	0.767			275	185				225	685	984		
41	1951-52	1951	Regular Season	78117	Paul Seymour	66	2209	206	615	0.335				186	245	0.759			225	220				165	598	575		
42	1951-52	1951	Regular Season	77537	Dick McGuire	64	2018	204	474	0.43				183	290	0.631			332	388				181	591	934		
43	1951-52	1951	Regular Season	77249	Jack Kerns	66	2148	186	480	0.388				217	325	0.668			514	212				265	589	813		
44	1951-52	1951	Regular Season	77743	Buckshot O'Brien	64	1577	228	613	0.372				122	149	0.819			122	124				115	578	412		
45	1951-52	1951	Regular Season	78225	Odle Spears	66	1673	225	570	0.395				116	152	0.763			303	163				225	566	651		
46	1951-52	1951	Regular Season	76584	Bob Donham	66	1980	201	413	0.487				149	293	0.509			330	228				223	551	753		
47	1951-52	1951	Regular Season	76442	Chuck Cooper	66	1976	197	545	0.361				149	201	0.741			502	134				219	543	779		

# Dataset Example

```
-- Table: All_Star_Players
CREATE TABLE All_Star_Players (
  PlayerID INT,
  Player VARCHAR(255),
  All_Star_Team VARCHAR(50),
  League VARCHAR(50),
  Season VARCHAR(7),
  Replaced BOOLEAN,
  PRIMARY KEY (PlayerID),
  UNIQUE (PlayerID, Season)
);

INSERT INTO All_Star_Players VALUES ('951', 'Ray Allen', 'East', 'NBA', '2009', '0');
INSERT INTO All_Star_Players VALUES ('2547', 'Chris Bosh', 'East', 'NBA', '2009', '1');
INSERT INTO All_Star_Players VALUES ('708', 'Kevin Garnett', 'East', 'NBA', '2009', '0');
INSERT INTO All_Star_Players VALUES ('101122', 'Danny Granger', 'East', 'NBA', '2009', '0');
INSERT INTO All_Star_Players VALUES ('2734', 'Devin Harris', 'East', 'NBA', '2009', '0');
```

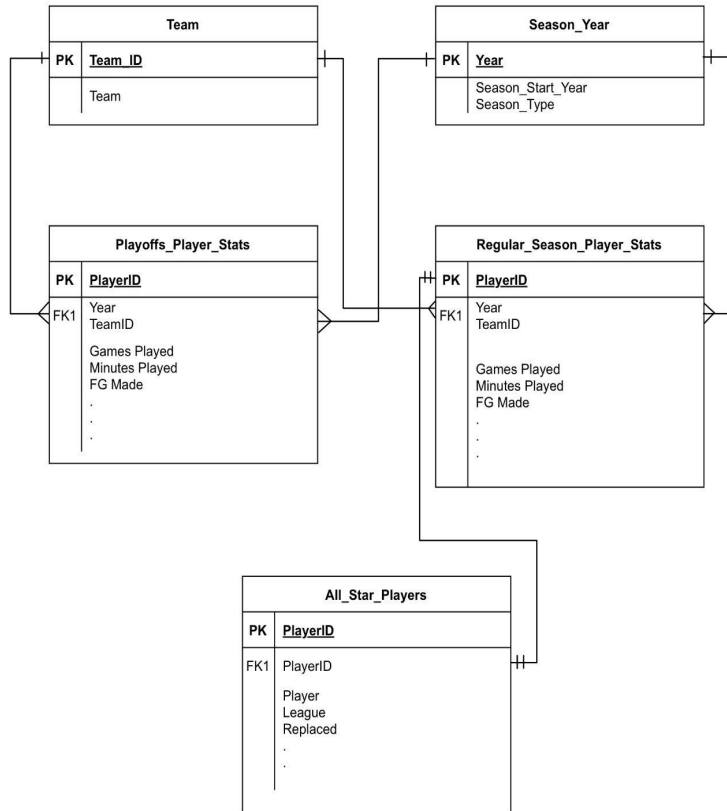
	PlayerID	Player	All_Star_Team	League	Season	Replaced
►	406	Shaquille O'Neal	West	NBA	2009	0
	708	Kevin Garnett	East	NBA	2009	0
	947	Allen Iverson	East	NBA	2009	0
	951	Ray Allen	East	NBA	2009	0
	977	Kobe Bryant	West	NBA	2009	0



ER Diagram

02

# Relationships



- **Team Table:**  
Type of Relationship: One-to-Many (OneToMany)
- **Season\_Year Table:**  
Type of Relationship: One-to-Many (OneToMany)
- **Regular\_Season\_Player\_Stats Table:**  
Type of Relationship: Many-to-One (ManyToOne)  
with Team and Season\_Year  
TeamID references Team(TeamID)
- **Playoffs\_Player\_Stats Table:**  
Type of Relationship: Many-to-One (ManyToOne)  
with Team and Season\_Year  
TeamID references Team(TeamID)
- **All\_Star\_Players Table:**  
Type of Relationship: One-to-One (OneToOne) with  
Regular\_Season\_Player\_Stats  
Regular\_Season\_Player\_Stats(PlayerID)





Dataset  
cleaning

03



Identify and count missing values in the Regular\_Season\_Player\_Stats table for the TeamID column.

```
SELECT COUNT(*) AS MissingCount  
FROM Regular_Season_Player_Stats  
WHERE TeamID IS NULL;
```

	MissingCount
▶	0

Replace missing values in the Regular\_Season\_Player\_Stats table for the TeamID column with a default value (assuming there is a default team ID, e.g., 0).

```
UPDATE Regular_Season_Player_Stats  
SET TeamID = 0  
WHERE TeamID IS NULL;
```

Identify and count duplicate player names in the Regular\_Season\_Player\_Stats table.

```
SELECT Player, COUNT(*) AS DuplicateCount
FROM Regular_Season_Player_Stats
GROUP BY Player
HAVING COUNT(*) > 1;
```

	Player	DuplicateCount
▶	Marcus Williams	2

Remove duplicate rows based on the Player column in the Regular\_Season\_Player\_Stats table.

```
DELETE t1
FROM Regular_Season_Player_Stats t1
INNER JOIN Regular_Season_Player_Stats t2
ON t1.PlayerID > t2.PlayerID AND t1.Player = t2.Player
WHERE t1.PlayerID > t2.PlayerID;
```

Convert the MinutesPlayed column in the Regular\_Season\_Player\_Stats table to a different data type (assuming it's stored as an integer, and you want to convert it to decimal).

```
ALTER TABLE Regular_Season_Player_Stats  
MODIFY COLUMN MinutesPlayed DECIMAL(10, 2);
```

Identify and remove outliers in the PointsScored column of the Regular\_Season\_Player\_Stats table using percentiles.

```
SELECT Player, PointsScored  
FROM Regular_Season_Player_Stats  
WHERE PointsScored < (  
    SELECT PointsScored  
    FROM Regular_Season_Player_Stats  
    ORDER BY PointsScored  
    LIMIT 1  
)  
OR PointsScored > (  
    SELECT PointsScored  
    FROM Regular_Season_Player_Stats  
    ORDER BY PointsScored DESC  
    LIMIT 1  
)  
LIMIT 0, 1000;
```

	Player	PointsScored

Convert player names in the All\_Star\_Players table to lowercase for consistency.

```
UPDATE All_Star_Players  
SET Player = LOWER(Player);
```

Trim leading and trailing spaces from the Team column in the Team table.

```
UPDATE Team  
SET Team = TRIM(Team);
```








































































# 04

SQL  
questions

# SQL Questions

1.Retrieve all columns from the Team table.

```
SELECT * FROM Team;
```

← T →			TeamID	Team
<input type="checkbox"/>	 编辑	 复制	 删除	1610612748 MIA
<input type="checkbox"/>	 编辑	 复制	 删除	1610612739 CLE
<input type="checkbox"/>	 编辑	 复制	 删除	1610612747 LAL
<input type="checkbox"/>	 编辑	 复制	 删除	1610612742 DAL
<input type="checkbox"/>	 编辑	 复制	 删除	1610612760 OKC
<input type="checkbox"/>	 编辑	 复制	 删除	1610612764 WAS
<input type="checkbox"/>	 编辑	 复制	 删除	1610612740 NOH
<input type="checkbox"/>	 编辑	 复制	 删除	1610612757 POR
<input type="checkbox"/>	 编辑	 复制	 删除	1610612761 TOR
<input type="checkbox"/>	 编辑	 复制	 删除	1610612754 IND
<input type="checkbox"/>	 编辑	 复制	 删除	1610612741 CHI
<input type="checkbox"/>	 编辑	 复制	 删除	1610612737 ATL
<input type="checkbox"/>	 编辑	 复制	 删除	1610612751 NJN
<input type="checkbox"/>	 编辑	 复制	 删除	1610612738 BOS
<input type="checkbox"/>	 编辑	 复制	 删除	1610612753 ORL
<input type="checkbox"/>	 编辑	 复制	 删除	1610612749 MIL
<input type="checkbox"/>	 编辑	 复制	 删除	1610612759 SAS
<input type="checkbox"/>	 编辑	 复制	 删除	1610612755 PHI
<input type="checkbox"/>	 编辑	 复制	 删除	1610612763 MEM
<input type="checkbox"/>	 编辑	 复制	 删除	1610612745 HOU
<input type="checkbox"/>	 编辑	 复制	 删除	1610612743 DEN
<input type="checkbox"/>	 编辑	 复制	 删除	1610612752 NYK
<input type="checkbox"/>	 编辑	 复制	 删除	1610612756 PHX
控制台 编辑 复制 删除				

## SQL Questions

2.Display unique seasons from the Season\_Year table.  
`SELECT DISTINCT Year FROM Season_Year;`

Year
2008-09



# SQL Questions

3. List all players from Regular\_Season\_Player\_Stats for the year 2008-09.
































```
SELECT * FROM Regular_Season_Player_Stats WHERE Year = '2008-09';
```

Year	SeasonStartYear	SeasonType	PlayerID	Player	TeamID	GamesPlayed	MinutesPlayed	FGMade	FGAttempts	FGPercent	ThreePtFG
2008-09	2008	Regular Season	2548	Dwyane Wade	1610612748	79	3048	854	1739	0.491	
2008-09	2008	Regular Season	2544	LeBron James	1610612739	81	3054	789	1613	0.489	
2008-09	2008	Regular Season	977	Kobe Bryant	1610612747	82	2960	800	1712	0.467	
2008-09	2008	Regular Season	1717	Dirk Nowitzki	1610612742	81	3050	774	1616	0.479	
2008-09	2008	Regular Season	201142	Kevin Durant	1610612760	74	2885	661	1390	0.476	
2008-09	2008	Regular Season	1712	Antawn Jamison	1610612764	81	3096	674	1441	0.468	
2008-09	2008	Regular Season	101108	Chris Paul	1610612740	78	3002	631	1255	0.503	
2008-09	2008	Regular Season	200750	Brandon Roy	1610612757	78	2903	633	1318	0.480	
2008-09	2008	Regular Season	2547	Chris Bosh	1610612761	77	2928	615	1263	0.487	
2008-09	2008	Regular Season	101122	Danny Granger	1610612754	67	2424	571	1277	0.447	
2008-09	2008	Regular Season	2732	Ben Gordon	1610612741	82	2999	598	1315	0.455	
2008-09	2008	Regular Season	2207	Joe Johnson	1610612737	79	3124	620	1420	0.437	
2008-09	2008	Regular Season	1713	Vince Carter	1610612751	80	2946	588	1345	0.437	
2008-09	2008	Regular Season	1718	Paul Pierce	1610612738	81	3035	540	1181	0.457	

# SQL Questions

4.Show the top 10 players with the most points scored in the regular season.

```
SELECT Player, PointsScored
FROM Regular_Season_Player_Stats
WHERE Year = '2008-09'
ORDER BY PointsScored DESC
LIMIT 10;
```

				Player	PointsScored ▾ 1
<input type="checkbox"/>	 编辑	 复制	 删除	Dwyane Wade	2386
<input type="checkbox"/>	 编辑	 复制	 删除	LeBron James	2304
<input type="checkbox"/>	 编辑	 复制	 删除	Kobe Bryant	2201
<input type="checkbox"/>	 编辑	 复制	 删除	Dirk Nowitzki	2094
<input type="checkbox"/>	 编辑	 复制	 删除	Kevin Durant	1871
<input type="checkbox"/>	 编辑	 复制	 删除	Antawn Jamison	1801
<input type="checkbox"/>	 编辑	 复制	 删除	Chris Paul	1781
<input type="checkbox"/>	 编辑	 复制	 删除	Brandon Roy	1765
<input type="checkbox"/>	 编辑	 复制	 删除	Chris Bosh	1746
<input type="checkbox"/>	 编辑	 复制	 删除	Danny Granger	1728

## SQL Questions

5. Retrieve the total number of teams.

```
SELECT COUNT(*) AS TotalTeams FROM Team;
```





































































TotalTeams
30

# SQL Questions

6. Find players who have played in both regular season and playoffs.

```
SELECT DISTINCT Player
FROM Regular_Season_Player_Stats
WHERE Year = '2008-09'
AND EXISTS (
    SELECT 1
    FROM Playoffs_Player_Stats
    WHERE PlayerID = Regular_Season_Player_Stats.PlayerID
);
```

← T →					Player
<input type="checkbox"/>					Antonio McDyess
<input type="checkbox"/>					Theo Ratliff
<input type="checkbox"/>					Joe Smith
<input type="checkbox"/>					Brent Barry
<input type="checkbox"/>					Kurt Thomas
<input type="checkbox"/>					Michael Finley
<input type="checkbox"/>					Rasheed Wallace
<input type="checkbox"/>					Donyell Marshall
<input type="checkbox"/>					Stephon Marbury
<input type="checkbox"/>					Ray Allen
<input type="checkbox"/>					Erick Dampier
<input type="checkbox"/>					Derek Fisher
<input type="checkbox"/>					Kobe Bryant
<input type="checkbox"/>					Peja Stojakovic
<input type="checkbox"/>					Jermaine O'Neal
<input type="checkbox"/>					Zydrunas Ilgauskas
<input type="checkbox"/>					Ben Wallace
<input type="checkbox"/>					Bruce Bowen
<input type="checkbox"/>					Tim Duncan
<input type="checkbox"/>					Chauncey Billups
<input type="checkbox"/>					Antonio Daniels
<input type="checkbox"/>					Tony Battie

# SQL Questions

7.Display the average efficiency for each team in the regular season.

```
SELECT Team.Team, AVG(Efficiency) AS AvgEfficiency
```

```
FROM Regular_Season_Player_Stats
```

```
JOIN Team ON Regular_Season_Player_Stats.TeamID = Team.TeamID
```

```
WHERE Regular_Season_Player_Stats.Year = '2008-09'
```

```
GROUP BY Team.Team;
```

Team	AvgEfficiency
MIA	638.200000
CLE	611.437500
LAL	677.533333
DAL	648.066667
OKC	512.812500
WAS	562.133333
NOH	640.071429
POR	659.428571
TOR	539.625000
IND	686.642857
CHI	755.846154
ATL	594.733333
NJN	629.357143
BOS	656.066667
ORL	689.000000
MIL	595.066667
SAS	505.315789
PHI	682.769231
MEM	644.166667
HOU	596.333333
DEN	759.153846
NYK	532.058824
PHX	723.142857
UTA	652.333333
GSW	615.375000






































































# SQL Questions

8. List all players who made at least one three-point shot in the regular season.

```
SELECT DISTINCT Player
```

```
FROM Regular_Season_Player_Stats
```

```
WHERE Year = '2008-09' AND ThreePtFGMade > 0;
```

← T →				Player
<input type="checkbox"/>				Dwyane Wade
<input type="checkbox"/>				LeBron James
<input type="checkbox"/>				Kobe Bryant
<input type="checkbox"/>				Dirk Nowitzki
<input type="checkbox"/>				Kevin Durant
<input type="checkbox"/>				Antawn Jamison
<input type="checkbox"/>				Chris Paul
<input type="checkbox"/>				Brandon Roy
<input type="checkbox"/>				Chris Bosh
<input type="checkbox"/>				Danny Granger
<input type="checkbox"/>				Ben Gordon
<input type="checkbox"/>				Joe Johnson
<input type="checkbox"/>				Vince Carter
<input type="checkbox"/>				Paul Pierce
<input type="checkbox"/>				Richard Jefferson
<input type="checkbox"/>				David West
<input type="checkbox"/>				Tony Parker
<input type="checkbox"/>				Andre Iguodala
<input type="checkbox"/>				Pau Gasol
<input type="checkbox"/>				O.J. Mayo
<input type="checkbox"/>				Yao Ming
<input type="checkbox"/>				Carmelo Anthony
<input type="checkbox"/>				Rudy Gay
控制台				

## SQL Questions

9. Show the total number of points scored in the regular season.

```
SELECT SUM(PointsScored) AS TotalPoints  
FROM Regular_Season_Player_Stats  
WHERE Year = '2008-09';
```

**TotalPoints**

245879

































































# SQL Questions

10. Retrieve players with a shooting percentage above 50% in the regular season.

```
SELECT Player
```

```
FROM Regular_Season_Player_Stats
```

```
WHERE Year = '2008-09' AND FGPercent > 0.5;
```

				Player
<input type="checkbox"/>				Chris Paul
<input type="checkbox"/>				Dwight Howard
<input type="checkbox"/>				Tony Parker
<input type="checkbox"/>				Pau Gasol
<input type="checkbox"/>				Yao Ming
<input type="checkbox"/>				Tim Duncan
<input type="checkbox"/>				Shaquille O'Neal
<input type="checkbox"/>				David Lee
<input type="checkbox"/>				Steve Nash
<input type="checkbox"/>				Amar'e Stoudemire
<input type="checkbox"/>				Nene
<input type="checkbox"/>				Ronnie Brewer
<input type="checkbox"/>				Emeka Okafor
<input type="checkbox"/>				Boris Diaw
<input type="checkbox"/>				Brook Lopez
<input type="checkbox"/>				Luis Scola
<input type="checkbox"/>				Paul Millsap
<input type="checkbox"/>				Grant Hill
<input type="checkbox"/>				Marc Gasol
<input type="checkbox"/>				Rajon Rondo
<input type="checkbox"/>				Kevin Garnett
<input type="checkbox"/>				Udonis Haslem

# SQL Questions

11.Display the total number of games played by each team in the regular season.

```
SELECT Team.Team, SUM(GamesPlayed) AS TotalGamesPlayed  
FROM Regular_Season_Player_Stats  
JOIN Team ON Regular_Season_Player_Stats.TeamID = Team.TeamID  
WHERE Regular_Season_Player_Stats.Year = '2008-09'  
GROUP BY Team.Team;
```

Team	TotalGamesPlayed
MIA	887
CLE	894
LAL	876
DAL	861
OKC	738
WAS	804
NOH	833
POR	827
TOR	797
IND	824
CHI	758
ATL	820
NJN	819
BOS	860
ORL	835
MIL	855
SAS	929
PHI	837
MEM	781
HOU	785
DEN	832
NYK	699
PHX	830
UTA	860
GSW	779

## SQL Questions

12. List the top 5 players with the highest average points per game in the regular season.

```
SELECT Player, AVG(PointsScored / GamesPlayed) AS AvgPointsPerGame
```

```
FROM Regular_Season_Player_Stats
```

```
WHERE Year = '2008-09'
```

```
GROUP BY Player
```

```
ORDER BY AvgPointsPerGame DESC
```

```
LIMIT 5;
```

<div><div>↩️⤵️⤴️➡️</div><div>▼</div></div>				Player	AvgPointsPerGame ▾ 1
<input type="checkbox"/>	 编辑	 复制	 删除	Dwyane Wade	30.20250000
<input type="checkbox"/>	 编辑	 复制	 删除	LeBron James	28.44440000
<input type="checkbox"/>	 编辑	 复制	 删除	Kobe Bryant	26.84150000
<input type="checkbox"/>	 编辑	 复制	 删除	Dirk Nowitzki	25.85190000
<input type="checkbox"/>	 编辑	 复制	 删除	Danny Granger	25.79100000

## SQL Questions

13. Show the total number of assists for each team in the regular season.

```
SELECT Team.Team, SUM(Assists) AS TotalAssists
```

```
FROM Regular_Season_Player_Stats
```

```
JOIN Team ON Regular_Season_Player_Stats.TeamID = Team.TeamID
```

```
WHERE Regular_Season_Player_Stats.Year = '2008-09'
```

```
GROUP BY Team.Team;
```

Team	TotalAssists
MIA	1740
CLE	1688
LAL	1936
DAL	1794
OKC	1706
WAS	1574
NOH	1648
POR	1667
TOR	1695
IND	1775
CHI	1921
ATL	1657
NJN	1635
BOS	1882
ORL	1862
MIL	1781
SAS	1787
PHI	1647
MEM	1240
HOU	1551
DEN	1833
NYK	1694
PHX	1907
UTA	2024
GSW	1749

## SQL Questions

14. Display the player with the most steals in the regular season.

```
SELECT Player, MAX(Steals) AS MaxSteals  
FROM Regular_Season_Player_Stats  
WHERE Year = '2008-09';
```

Player	MaxSteals
Dwyane Wade	216

## SQL Questions

15. List teams with an average efficiency above 15 in the regular season.

```
SELECT Team.Team
```

```
FROM Regular_Season_Player_Stats
```

```
JOIN Team ON Regular_Season_Player_Stats.TeamID = Team.TeamID
```

```
WHERE Regular_Season_Player_Stats.Year = '2008-09'
```

```
GROUP BY Team.Team
```

```
HAVING AVG(Efficiency) > 15;
```

Team
MIA
CLE
LAL
DAL
OKC
WAS
NOH
POR
TOR
IND
CHI
ATL
NJN
BOS
ORL
MIL
SAS
PHI
MEM
HOU
DEN
NYK
PHX
UTA
GSW







































































# SQL Questions

16. Show players who played more than 30 minutes in a single game.

SELECT Player

FROM Regular\_Season\_Player\_Stats

WHERE Year = '2008-09' AND MinutesPlayed > 30;

← T →				Player
<input type="checkbox"/>	 编辑	 复制	 删除	Dwyane Wade
<input type="checkbox"/>	 编辑	 复制	 删除	LeBron James
<input type="checkbox"/>	 编辑	 复制	 删除	Kobe Bryant
<input type="checkbox"/>	 编辑	 复制	 删除	Dirk Nowitzki
<input type="checkbox"/>	 编辑	 复制	 删除	Kevin Durant
<input type="checkbox"/>	 编辑	 复制	 删除	Antawn Jamison
<input type="checkbox"/>	 编辑	 复制	 删除	Chris Paul
<input type="checkbox"/>	 编辑	 复制	 删除	Brandon Roy
<input type="checkbox"/>	 编辑	 复制	 删除	Chris Bosh
<input type="checkbox"/>	 编辑	 复制	 删除	Danny Granger
<input type="checkbox"/>	 编辑	 复制	 删除	Ben Gordon
<input type="checkbox"/>	 编辑	 复制	 删除	Joe Johnson
<input type="checkbox"/>	 编辑	 复制	 删除	Vince Carter
<input type="checkbox"/>	 编辑	 复制	 删除	Paul Pierce
<input type="checkbox"/>	 编辑	 复制	 删除	Dwight Howard
<input type="checkbox"/>	 编辑	 复制	 删除	Richard Jefferson
<input type="checkbox"/>	 编辑	 复制	 删除	David West
<input type="checkbox"/>	 编辑	 复制	 删除	Tony Parker
<input type="checkbox"/>	 编辑	 复制	 删除	Andre Iguodala
<input type="checkbox"/>	 编辑	 复制	 删除	Pau Gasol
<input type="checkbox"/>	 编辑	 复制	 删除	O.J. Mayo
<input type="checkbox"/>	 编辑	 复制	 删除	Yao Ming
	控制台	 编辑	 复制	 删除 Carmelo Anthony



# SQL Questions

17.Display players and their teams in the regular season.

```
SELECT Player, Team.Team
```

```
FROM Regular_Season_Player_Stats
```

```
JOIN Team ON Regular_Season_Player_Stats.TeamID = Team.TeamID
```

```
WHERE Regular_Season_Player_Stats.Year = '2008-09';
```

Player	Team
Dwyane Wade	MIA
Michael Beasley	MIA
Jermaine O'Neal	MIA
Mario Chalmers	MIA
Udonis Haslem	MIA
Daequan Cook	MIA
Jamario Moon	MIA
Chris Quinn	MIA
Yakhouba Diawara	MIA
James Jones	MIA
Jamaal Magloire	MIA
Luther Head	MIA
Joel Anthony	MIA
Mark Blount	MIA
Dorell Wright	MIA
LeBron James	CLE
Mo Williams	CLE
Zydrunas Ilgauskas	CLE
Delonte West	CLE
Anderson Varejao	CLE
Daniel Gibson	CLE
Wally Szczerbiak	CLE
Joe Smith	CLE
Sasha Pavlovic	CLE
JJ Hickson	CLE

# SQL Questions

18. List players who played for a team in the regular season but not in the playoffs.

```
SELECT DISTINCT Regular_Season_Player_Stats.Player
FROM Regular_Season_Player_Stats
LEFT JOIN Playoffs_Player_Stats ON Regular_Season_Player_Stats.PlayerID =
Playoffs_Player_Stats.PlayerID
WHERE Regular_Season_Player_Stats.Year = '2008-09'
AND Playoffs_Player_Stats.PlayerID IS NULL;
```

## Player

Kevin Durant

Antawn Jamison

Chris Bosh

Danny Granger

Vince Carter

Richard Jefferson

O.J. Mayo

Rudy Gay

Devin Harris

Al Harrington

Caron Butler

Shaquille O'Neal

David Lee

Jeff Green

Jamal Crawford

Nate Robinson

Charlie Villanueva

Russell Westbrook

Kevin Martin

Eric Gordon

Stephen Jackson

Jason Richardson

Andrea Bargnani

Al Thornton

Wilson Chandler

## SQL Questions

19. Show the teams and the number of players in the regular season.

```
SELECT Team.Team, COUNT(Regular_Season_Player_Stats.PlayerID)
```

```
AS NumberOfPlayers
```

```
FROM Team
```

```
LEFT JOIN Regular_Season_Player_Stats ON
```

```
Team.TeamID = Regular_Season_Player_Stats.TeamID
```

```
WHERE Regular_Season_Player_Stats.Year = '2008-09'
```

```
GROUP BY Team.Team;
```

Team	NumberOfPlayers
MIA	15
CLE	16
LAL	15
DAL	15
OKC	16
WAS	15
NOH	14
POR	14
TOR	16
IND	14
CHI	13
ATL	15
NJN	14
BOS	15
ORL	14
MIL	15
SAS	19
PHI	13
MEM	12
HOU	15
DEN	13
NYK	17
PHX	14
UTA	15
GSW	16

## SQL Questions

20. Show the teams and the number of players in the regular season.

```
SELECT Team.Team, COUNT(Regular_Season_Player_Stats.PlayerID)
```

```
AS NumberOfPlayers
```

```
FROM Team
```

```
LEFT JOIN Regular_Season_Player_Stats ON
```

```
Team.TeamID = Regular_Season_Player_Stats.TeamID
```

```
WHERE Regular_Season_Player_Stats.Year = '2008-09'
```

```
GROUP BY Team.Team;
```

Team	NumberOfPlayers
MIA	15
CLE	16
LAL	15
DAL	15
OKC	16
WAS	15
NOH	14
POR	14
TOR	16
IND	14
CHI	13
ATL	15
NJN	14
BOS	15
ORL	14
MIL	15
SAS	19
PHI	13
MEM	12
HOU	15
DEN	13
NYK	17
PHX	14
UTA	15
GSW	16

## SQL Questions

21. Find the top 3 players with the highest average efficiency in the regular season. Include their team and average efficiency

```
SELECT Player, Team.Team, AVG(Efficiency) AS AvgEfficiency
FROM Regular_Season_Player_Stats
JOIN Team ON Regular_Season_Player_Stats.TeamID = Team.TeamID
WHERE Regular_Season_Player_Stats.Year = '2008-09'
GROUP BY Player, Team.Team
ORDER BY AvgEfficiency DESC
LIMIT 3;
```

Player	Team	AvgEfficiency ▾ 1
LeBron James	CLE	2501.000000
Chris Paul	NOH	2376.000000
Dwyane Wade	MIA	2314.000000

## SQL Questions

22. Identify players who had the highest percentage of three-point shots made relative to their total field goals attempted in the regular season.

```
SELECT Player, (ThreePtFGMade / FGAttempts) AS ThreePtPercentage  
FROM Regular_Season_Player_Stats  
WHERE Year = '2008-09' AND FGAttempts > 0  
ORDER BY ThreePtPercentage DESC  
LIMIT 1;
```

Player	ThreePtPercentage
Donyell Marshall	0.3425

## SQL Questions

23. List the teams that had the largest difference in average points scored between the regular season and playoffs.

```
SELECT Team.Team, AVG(Regular_Season_Player_Stats.PointsScored) AS AvgPointsRegularSeason,  
       AVG(Playoffs_Player_Stats.PointsScored) AS AvgPointsPlayoffs,  
       (AVG(Playoffs_Player_Stats.PointsScored) - AVG(Regular_Season_Player_Stats.PointsScored)) AS  
PointDifference  
FROM Team  
JOIN Regular_Season_Player_Stats ON Team.TeamID = Regular_Season_Player_Stats.TeamID  
JOIN Playoffs_Player_Stats ON Team.TeamID = Playoffs_Player_Stats.TeamID  
WHERE Regular_Season_Player_Stats.Year = '2008-09' AND Playoffs_Player_Stats.Year = '2008-09'  
GROUP BY Team.Team  
ORDER BY PointDifference DESC  
LIMIT 1;
```

Team	AvgPointsRegularSeason	AvgPointsPlayoffs	PointDifference
LAL	589.2000	196.2500	-392.9500



## SQL Questions

24. Find the player who, in the regular season of 2008-09, had the highest average ratio of points scored to minutes played, excluding players who have played fewer than 500 minutes. Include the player's team, the total number of games played, and the total minutes played. Order the result by the average ratio in descending order.

```
SELECT Regular_Season_Player_Stats.Player, Team.Team, TotalGamesPlayed, TotalMinutesPlayed,
       AVG(PointsScored / MinutesPlayed) AS AvgPointsToMinutesRatio
FROM (
    SELECT Player, TeamID, SUM(GamesPlayed) AS TotalGamesPlayed,
           SUM(MinutesPlayed) AS TotalMinutesPlayed
    FROM Regular_Season_Player_Stats
    WHERE Year = '2008-09'
    GROUP BY Player, TeamID
    HAVING SUM(MinutesPlayed) >= 500
) AS PlayerTotals
JOIN Regular_Season_Player_Stats ON PlayerTotals.Player = Regular_Season_Player_Stats.Player
                                AND PlayerTotals.TeamID = Regular_Season_Player_Stats.TeamID
JOIN Team ON Regular_Season_Player_Stats.TeamID = Team.TeamID
GROUP BY Regular_Season_Player_Stats.Player, Team.Team, TotalGamesPlayed, TotalMinutesPlayed
ORDER BY AvgPointsToMinutesRatio DESC
LIMIT 1;
```

Player	Team	TotalGamesPlayed	TotalMinutesPlayed	AvgPointsToMinutesRatio
Dwyane Wade	MIA	79	3048	0.78280000

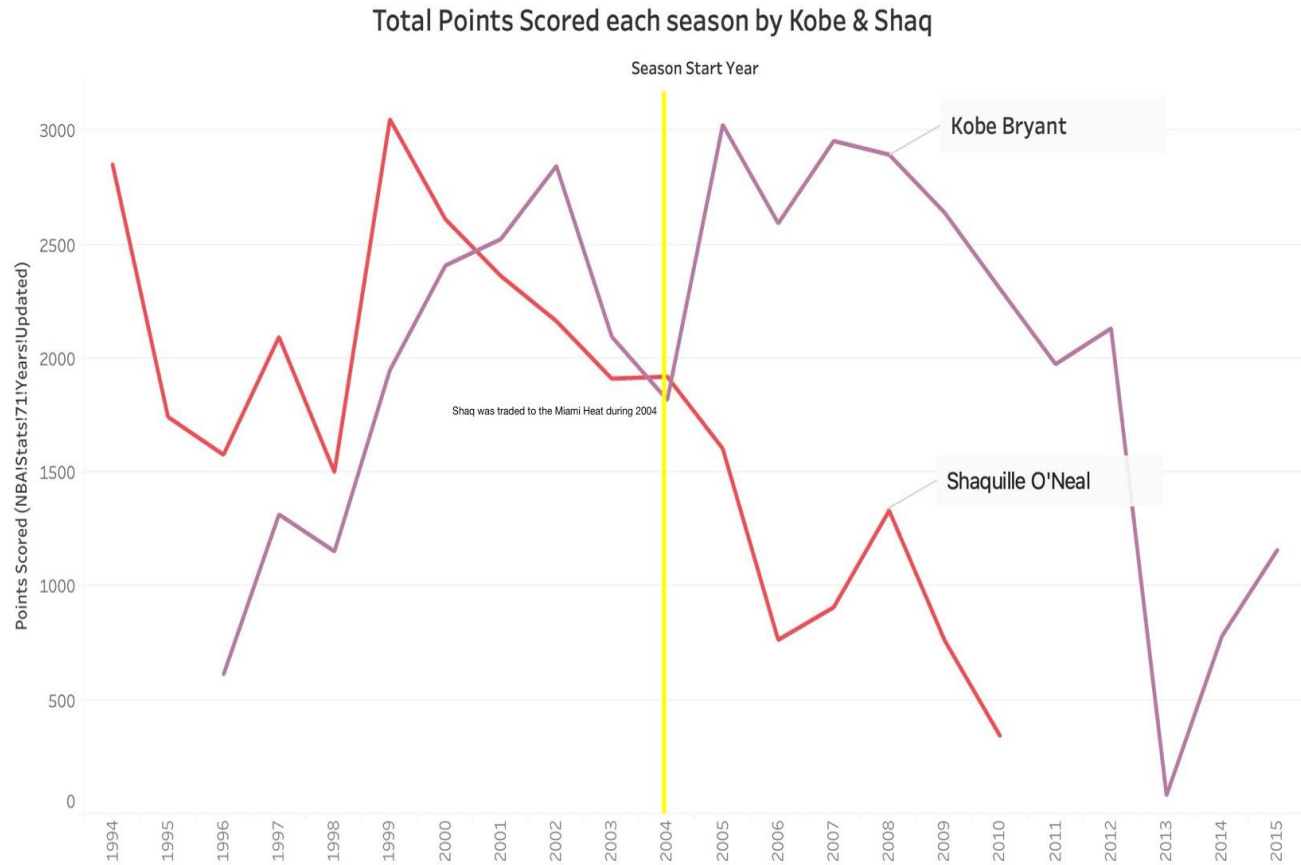
A low-angle, black and white photograph of several tall skyscrapers reaching towards a cloudy sky. The perspective creates a sense of height and scale. A white rectangular frame is superimposed over the center of the image.

Visualization

05

# Comparing *Kobe Bryant* and *Shaquille O'Neal*

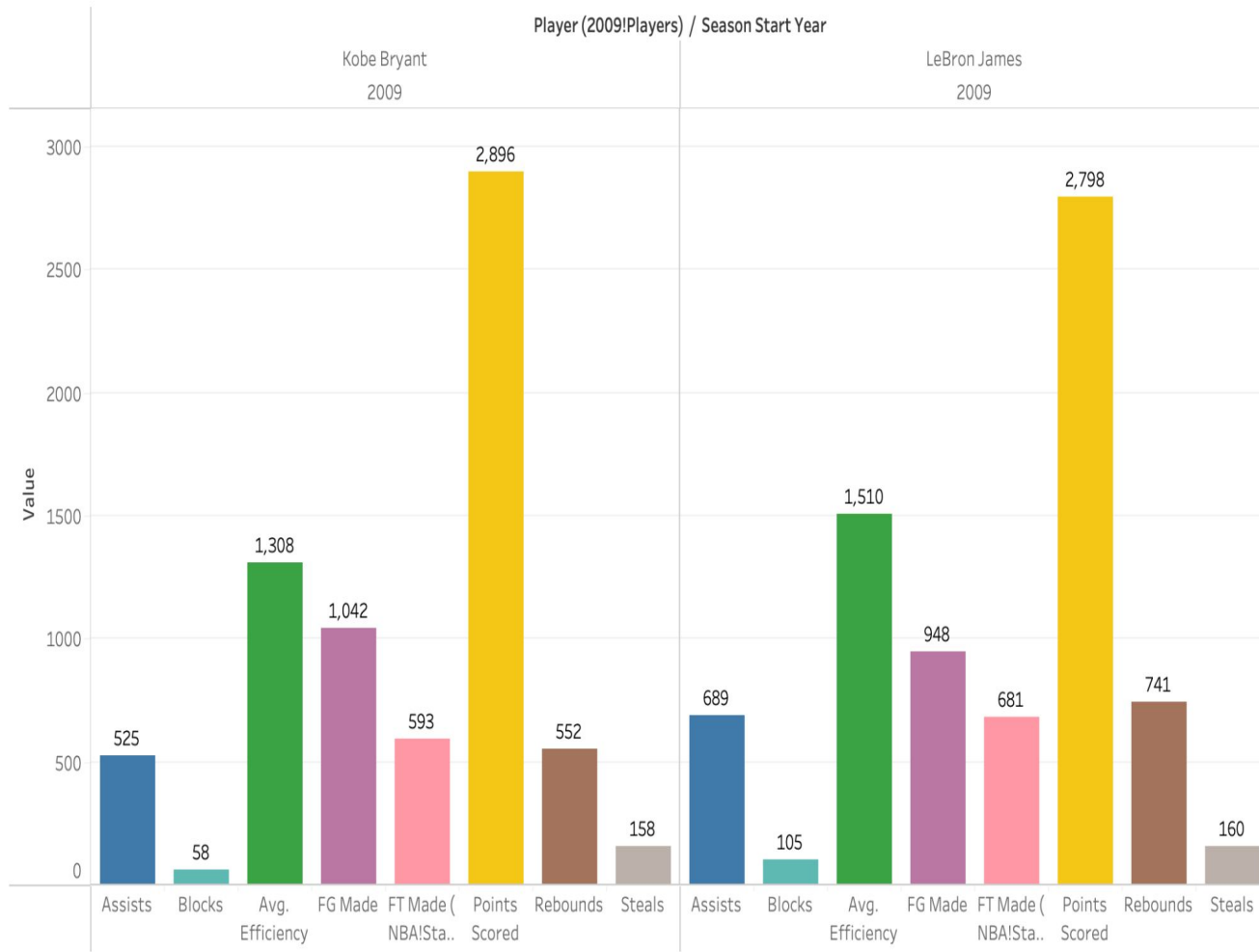
- Bryant and O'Neal were once considered the most dominant duo in NBA history.
- However, they went their separate ways in 2004, with O'Neal being traded to the Miami Heat while Bryant remained with the LA Lakers. After O'Neal's departure, Bryant single-handedly elevated his total points scored, achieving a remarkable feat of 3,027 points during the 2005-06 season.
- On the other hand, O'Neal experienced a significant decline in his total points scored post-trade, mainly attributed to the challenges of aging and injuries.



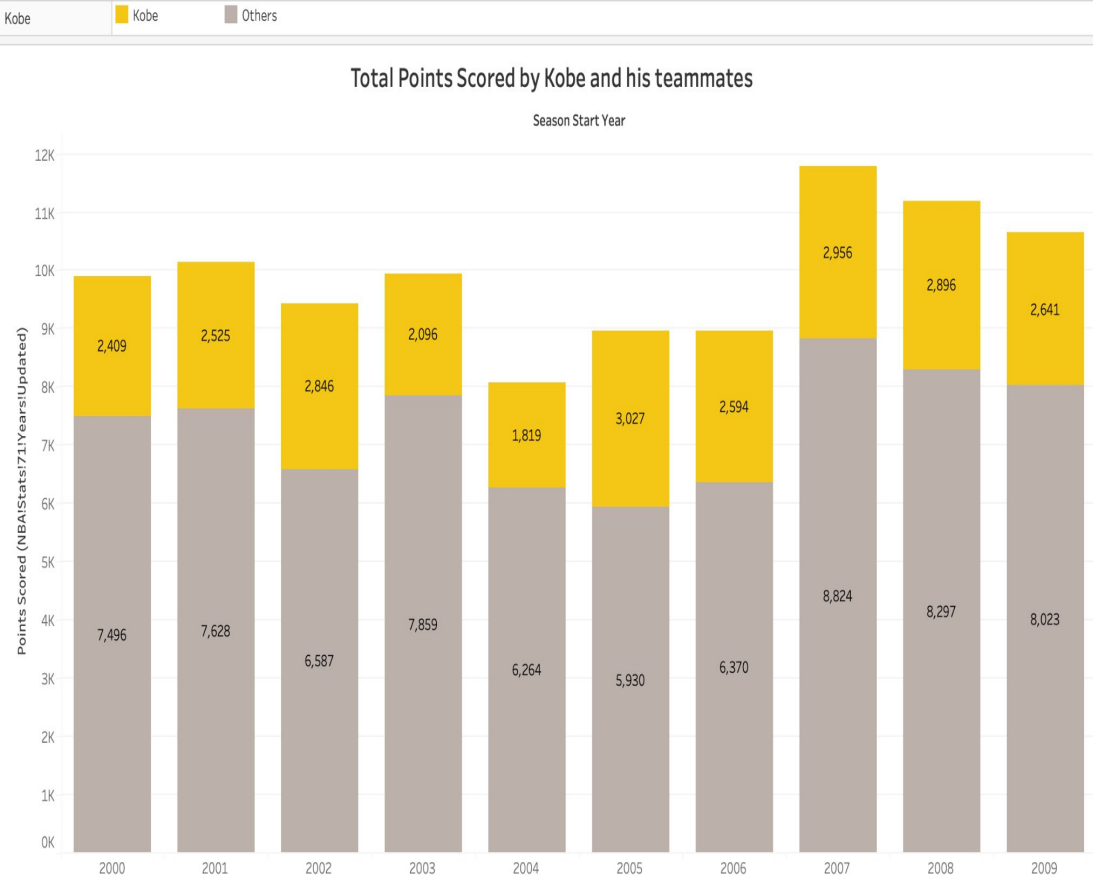
# Comparing *Kobe Bryant* and *LeBron James*

- Even though Kobe led the Los Angeles Lakers to the championship in the 2008-2009 season, the MVP for that year was LeBron James of the Cleveland Cavaliers. This inevitably raises questions about whether LeBron truly deserved the MVP.
- From the statistics, it can be seen that, apart from scoring, LeBron outperformed Kobe in various aspects. The overall performance of the Cavaliers, with a better team record than Kobe's Lakers, adds weight to LeBron's deserving the regular-season MVP award.

## Who deserves the MVP trophy more?



# Kobe Bryant with his teammates

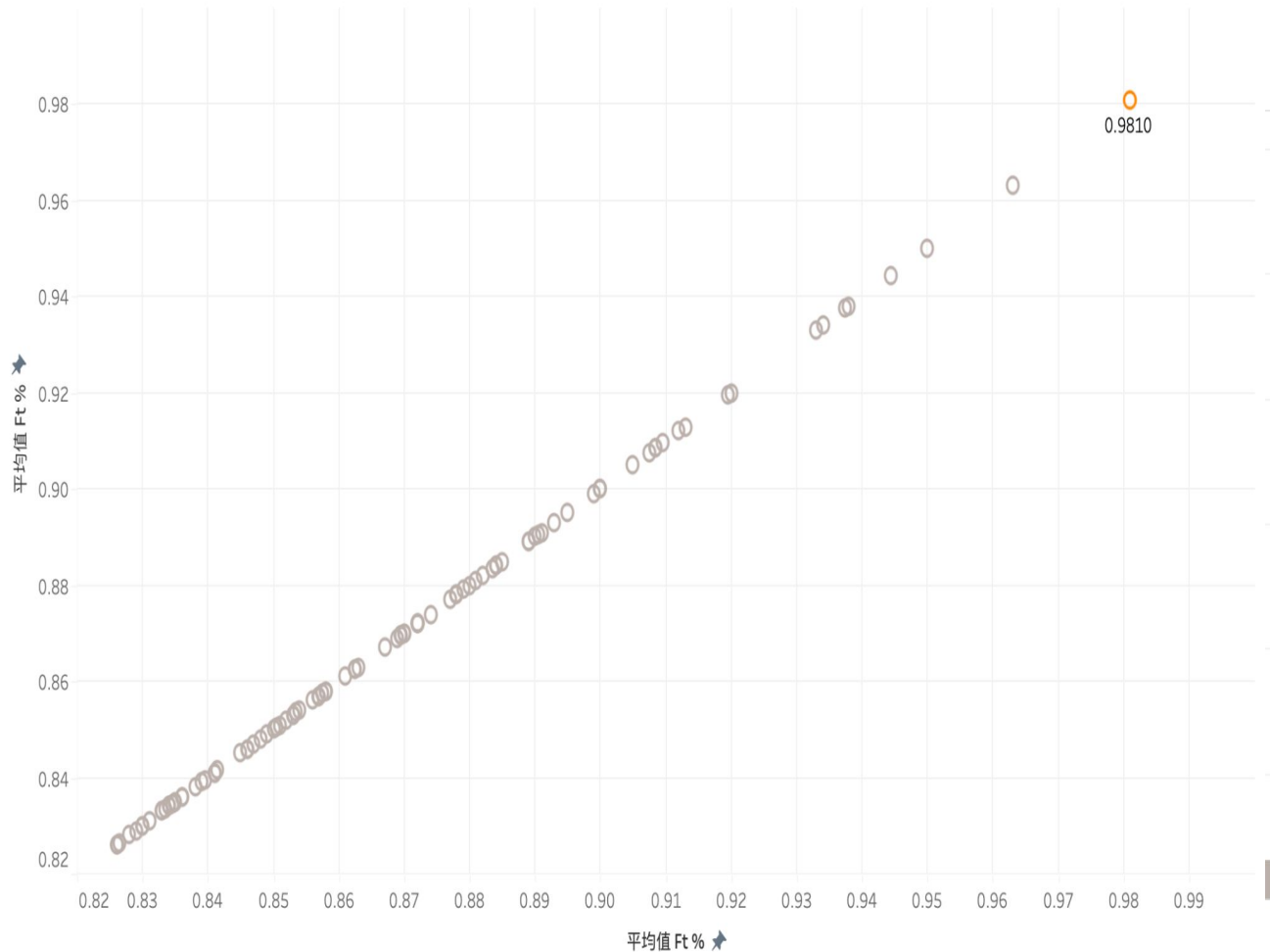


- As one of the greatest scorers in NBA history, Kobe's primary role on the court was scoring. However, in the seasons 2008-09 and 2009-10 when he led the Lakers to the NBA Finals, Kobe's individual scoring output did not reach the same heights as before.
- From the chart, it can be observed that Kobe's teammates played a more significant role in scoring. This support from his teammates prevented Kobe from being a lone force, ultimately leading to championship victories in the 2009 and 2010 seasons, overcoming past setbacks. This also proves that basketball is a team sport, and winning is not possible without teamwork and collaboration.

## A Historical Performance

- On April 15, 2009, the Raptors' **José Calderón** topped the 1980–81 Rockets' Calvin Murphy for the NBA record for free-throw percentage. Calderón made **98.1%** of his free throws in the season, missing only 3 of the 154 he took, taking the record from Murphy's mark of 95.8%.

Jose Calderon's Magnificant FT % in 2009





Thanks

**CREDITS:** This presentation template was created by **Slidesgo**, and includes icons by **Flaticon**, and infographics & images by **Freepik**