Package 'ISAR'

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Type Package

Title Introduction to Sports Analytics using R (ISAR) Data

Version 0.1.12

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Description We provide data sets used in the forthcoming textbook ``Introduction to Sports Analytics using R'' by Elmore and Urbaczweski (2024). The package currently contains sixteen datasets and should be published in early 2024.

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Encoding UTF-8

LazyData true

Depends R (>= 2.10)

RoxygenNote 7.2.3

URL https://github.com/rtelmore/ISAR

BugReports https://github.com/rtelmore/ISAR/issues

NeedsCompilation no

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Repository CRAN

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Contents

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avs_roster_2021   *2021 NHL Colorado Avalanche Roster (from NHL's API)*

Description

A dataset containing the NHL's Avalanche Roster

Usage

```
avs_roster_2021
```

Format

A data frame with 28 rows and 8 variables:

jersey_number player jersey number

person_id player ID

person_full_name player full name

person_link API link to player data

position_code position abbreviation

position_name position name

position_type position type

position_abbreviation another position abbreviation

Source

https://www.nhl.com/stats/

---

avs_stats_2021 *NHL's Colorado Avalanche Player Statistics*

Description

A dataset containing the statistics for all Colorado Avalanche players on the 2021-2 roster

Usage

avs_stats_2021

Format

A data frame with 196 rows and 50 variables:

person_id NHL API Player ID

person_full_name Player full name

season Season

season_start Season start

stat_assists Assists

stat_goals Goals

stat_pim Penalty minutes

stat_games Games played

stat_penalty_minutes Penalty minutes

stat_plus_minus Plus-minus value

stat_points Points

stat_power_play_goals Power play goals

stat_game_winning_goals Game winning goals

stat_short_handed_goals Short handed goals

stat_shots Shots

stat_shot_pct Shot percentage

stat_time_on_ice Time on ice

stat_hits Hits

stat_power_play_points Power play points

stat_power_play_time_on_ice Power play time on ice

stat_even_time_on_ice Even play time on ice

stat_face_off_pct Face off percentage

stat_over_time_goals Overtime goals

stat_short_handed_points Short handed points

stat_short_handed_time_on_ice Short handed time on ice

stat_blocked Blocks

stat_shifts Shifts

stat_save_percentage Save percentage

stat_goal_against_average Goals against average

stat_ot OT

stat_shutouts Shutouts

stat_ties Ties

stat_wins Wins

stat_losses Losses

stat_saves Saves

stat_power_play_saves Power play saves

stat_short_handed_saves Short handed saves

stat_even_saves Even play saves

stat_short_handed_shots Short handed shots

stat_even_shots Even play shots

stat_power_play_shots Power play shots

stat_games_started Games started

stat_shots_against Shots against

stat_goals_against Goals against

stat_power_play_save_percentage Power play save percentage

stat_short_handed_save_percentage Short handed save percentage

stat_even_strength_save_percentage Even strength save percentage

team_name Team name

team_link Team link

team_id Team ID

Source

https://www.nhl.com/stats/

---

dk_lac_dal *Draftkings Showdown Game (Clippers vs. Mavericks)*

Description

A dataset containing the Draftkings salary information for Game 3 of the 2021 NBA Playoffs between the Los Angeles Clippers and the Dallas Mavericks.

Usage

```
dk_lac_dal
```

Format

A data frame with 68 rows and 9 variables:

position real-life roster position of the player

name_id player name and Draftkings ID

name player name

id Draftkings player ID

roster_position Draftkings roster position

salary player salary

game_info game information for the players

team_abbrev player team as an abbreviation

avg_points_per_game player average Draftkings points per game

Source

Draftkings Contest Page

---

dk_mem_utah *Draftkings Showdown Game (Grizzlies vs. Jazz)*

Description

A dataset containing the Draftkings salary information for Game 4 of the 2021 NBA Playoffs between the Memphis Grizzlies and Utah Jazz.

Usage

```
dk_mem_utah
```

Format

A data frame with 68 rows and 9 variables:

position real-life roster position of the player

name_id player name and Draftkings ID

name player name

id Draftkings player ID

roster_position Draftkings roster position

salary player salary

game_info game information for the players

team_abbrev player team as an abbreviation

avg_points_per_game player average Draftkings points per game

Source

Draftkings Contest Page

---

epl_gk_stats_2022   *2021-2022 English Premier League Goalkeeper Statistics*

Description

A dataset containing individual goalkeeper statistics for the English Premier League's 2021 - 2022 season

Usage

epl_gk_stats_2022

Format

A data frame with 314 rows and 13 variables:

player Player name

nation Player home country

pos Player position

squad Player team

age Age of player

born Birth year of player

min_p90 Total minutes played in the season per ninety minutes

goals Goals scored against player

pk_allowed Penalty kick goals scored against player

free_kick_goals Free kick goals scored against player

corner_kick_goals Corner kick goals scored against player

own_goals_against Own goals scored against player

post_shot_xG Post-shot expected goals

post_shot_xG_per_shot_on_target Post-shot expected goals per shot on target

post_shot_xG_minus_goals Post-shot expected goals minus goals per shot on target

post_shot_xG_minus_goals_p90 Post-shot expected goals minus goals per shot on target per ninety minutes

launch_completed Passes longer than 40 yards (launch) completed

launch_attempt Passes longer than 40 yards attempted

launch_completion_percent Passes longer than 40 yards (launch) completion percentage

pass_attempt Passes attempted

throw_attempt Throws attempted

pass_launch_percent Percentage of passes launched

avg_pass_len Average pass length

goal_kick_attempt Goal kick attempts

gk_launch_percent Percentage of goals kicks launched

avg_gk_len Average goal kick length

crosses_faced Number of crosses faced

crosses_stopped Number of crosses stopped

stop_percent Cross stop percentage

def_actions_out_pen_area Defensive actions outside the penalty area

def_actions_out_pen_area_p90 Defensive actions outside the penalty area per ninety minutes

avg_dist_def_actions Average distance from goal of defensive actions

Source

<https://fbref.com/en/comps/9/2021-2022/keepersadv/2021-2022-Premier-League-Stats>

`epl_player_stats_2022` *2021-2022 English Premier League Player Statistics*

Description

A dataset containing individual player statistics for the English Premier League's 2021 - 2022 season

Usage

```
epl_player_stats_2022
```

Format

A data frame with 314 rows and 13 variables:

player Player name

nation Player home country

pos Player position

squad Player team

age Age of player

born Birth year of player

mp Matches played

starts Number of matches in which player started the game

min Total minutes played in the season

min_p90 Total minutes played in the season per ninety minutes

goals Goals scored by player

assists Assists by player

goals_assists Goals scored plus assists by player

non_pen_goals Non-penalty goals scored by player

pen_goals Penalty kick goals scored by player

pen_att Penalty kick attempts by player

yellow_cards Yellow cards earned by player

red_cards Red cards earned by player

xG Expected goals

non_pen_xG Non-penalty kick expected goals

xA Expected assists

non_pen_xGxA Non-penalty kick expected goals and assists

prg_carry Progressive carries

prg_pass Progressive passes

prg_reception Progressive passes received

goals_p90 Goals per ninety minutes

assists_p90 Assists per ninety minutes

goals_assists_p90 Goals and assists per ninety minutes

non_pen_goals_p90 Non-penalty kick goals per ninety minutes

non_pen_goals_assists_p90 Non-penalty kick goals and assists per ninety minutes

xG_p90 Expected goals per ninety minutes

xA_p90 Expected assists per ninety minutes

xG_xA_p90 Expected goals plus assists per ninety minutes

non_pen_xG_p90 Expected goals minus penalty goals per ninety minutes

non_pen_xG_xA_p90 Expected goals plus assists minus penalty goals per ninety minutes

Source

https://fbref.com/en/comps/9/2021-2022/stats/2021-2022-Premier-League-Stats

epl_team_stats	*2017-18 through 2021-22 English Premier League Tea, Statistics*

Description

A dataset containing team statistics for the English Premier League

Usage

```
epl_team_stats
```

Format

A data frame with 100 rows and 29 variables:

squad Team or club name

season Season

num_players Number of players used in the season

age Age of players weighted by minutes played

poss Possession as a percentage of passes attempted

goals Goals scored by team

assists Assists by team

goals_assists Goals scored plus assists by team

non_pen_goals Non-penalty goals scored by team

pen_goals Penalty kick goals scored by team

pen_att Penalty kick attempts by team

yellow_cards Yellow cards earned by team

red_cards Red cards earned by team

xG Expected goals

non_pen_xG Non-penalty kick expected goals

xA Expected assists

non_pen_xGxA Non-penalty kick expected goals and assists

prg_carry Progressive carries

prg_pass Progressive passes

goals_p90 Goals per ninety minutes

assists_p90 Assists per ninety minutes

goals_assists_p90 Goals and assists per ninety minutes

non_pen_goals_p90 Non-penalty kick goals per ninety minutes

non_pen_goals_assists_p90 Non-penalty kick goals and assists per ninety minutes

xG_p90 Expected goals per ninety minutes

xA_p90 Expected assists per ninety minutes

xG_xA_p90 Expected goals plus assists per ninety minutes

non_pen_xG_p90 Expected goals minus penalty goals per ninety minutes

non_pen_xG_xA_p90 Expected goals plus assists minus penalty goals per ninety minutes

Source

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masters   *2019 Masters Tournament Scores*

Description

A dataset containing the scores from the 2019 Masters Golf Tournament.

Usage

    masters

Format

A data frame with 87 rows and 9 variables:

pos finishing position for a player

player_name name of the golfer

nationality nationality of the golfer

score final score relative to par

round_1 number of strokes from the first round

round_2 number of strokes from the second round

round_3 number of strokes from the third round

round_4 number of strokes from the fourth round

total total strokes from all rounds

Source

| nba_adv_team_2021 | *2021 NBA Advanced Statistics (Team) for the 2020-21 Season* |

Description

A dataset containing the NBA Four Factor table on nba.com

Usage

```
nba_adv_team_2021
```

Format

A data frame with 2160 rows and 29 variables:

idGame Game ID on nba.com

slugTeam Team abbreviation

idTeam Team ID on nba.com

pctAST Assist percentage

pctOREB Offensive rebound percentage

pctDREB Defensive rebound percentage

pctTREB Total rebound percentage

pctTOVE Turnover percentage (one)

pctTOVTeam Turnover percentage (two)

pctEFG Effective field goal percentage

pctTS True Shooting percentage

pctUSG Usage metric

pctUSGE Usage percentage

teamName Team Mascot

cityTeam City of slugTeam

minExact Total minutes played

ortgE offensive rating (effective ?)

ortg offensive rating

drtgE defensive rating (effective ?)

drtg defensive rating

netrtgE net rating (effective ?)

netrtg net rating

ratioASTtoTOV Assists to turnover ratio

ratioAST Assist ratio

paceE pace (effective ?)

pace pace

pacePer40PACE_PER40 pace per forty minutes

possessions team possessions in game

ratioPIE Player impact estimate

Source

http://asbcllc.com/nbastatR/reference/box_scores.html

---

nba_adv_team_2023   *NBA Advanced Statistics (Team) for the 2022-23 Season*

Description

A dataset containing the NBA Four Factor table on nba.com

Usage

nba_adv_team_2023

Format

A data frame with 2460 rows and 29 variables:

game_id Game ID on nba.com

team_id Team ID on nba.com

team_name Team name

team_abbreviation Team abbreviation

team_city Team city

min Total minutes in the game

e_off_rating offensive rating (effective ?)

off_rating offensive rating

e_def_rating defensive rating (effective ?)

def_rating defensive rating

e_net_rating net rating (effective ?)

net_rating net rating

ast_pct Assist percentage

ast_tov Assists to turnover ratio

ast_ratio Assist ratio

oreb_pct Offensive rebound percentage

dreb_pct Defensive rebound percentage

reb_pct Total rebound percentage

e_tm_tov_pct Turnover percentage (effective?)

tm_tov_pct Turnover percentage

efg_pct Effective field goal percentage

ts_pct True Shooting percentage

usg_pct Usage percentage

e_usg_pct Usage percentage (effective?)

e_pace pace (effective ?)

pace pace

pace_per40 pace per forty minutes

poss team possessions in game

pie Player impact estimate

Source

http://asbcllc.com/nbastatR/reference/box_scores.html

---

nba_ff_team_2021 *2021 NBA Four Factors (Team) for the 2020-21 Season*

Description

A dataset containing the NBA Four Factor table on nba.com

Usage

nba_ff_team_2021

Format

A data frame with 2160 rows and 11 variables:

idGame Game ID on nba.com

slugTeam Team abbreviation

idTeam Team ID on nba.com

pctEFGOpponent Effective field goal percentage of opponent

pctTOVOpponent Turnover percentage of opponent

pctOREBOpponent Offensive rebound percentage of opponent

teamName Team Mascot

cityTeam City of slugTeam

minExact Total minutes played

rateFTA Free throw rate of slugTeam

rateFTAOpponent Free throw rate of opponent

Source

http://asbcllc.com/nbastatR/reference/box_scores.html

---

nba_ff_team_2023   *NBA Four Factors (Team) for the 2020-21 Season*

Description

A dataset containing the NBA Four Factor table on nba.com

Usage

    nba_ff_team_2023

Format

A data frame with 2460 rows and 14 variables:

game_id Game ID on nba.com

team_id Team ID on nba.com

team_name Team name on nba.com

team_abbreviation Team abbreviation on nba.com

team_city Team city

min Minutes in the game

efg_pct Effective field goal percentage

fta_rate Free throw rate of team

tm_tov_pct Turnover percentage of opponent

oreb_pct Offensive rebound percentage of opponent

opp_efg_pct Effective field goal percentage of opponent

opp_fta_rate Free throw rate of opponent

opp_tov_pct Turnover percentage of opponent

opp_oreb_pct Offensive rebound percentage of opponent

Source

http://asbcllc.com/nbastatR/reference/box_scores.html

---

nba_games_2021	*2021 NBA Game Logs for the 2020-21 Season*

Description

A dataset containing the NBA Games table on nba.com

Usage

```
nba_games_2021
```

Format

A data frame with 1832 rows and 47 variables:

yearSeason Season in which the game was played (YYYY)

slugSeason Season in which the game was played (YYYY-YY)

slugLeague Always given as NBA

typeSeason Regular season data

dateGame Date in YYYY-MM-DD

idGame Game ID on nba.com

numberGameTeamSeason slugTeam game number in the season

nameTeam Full team name

idTeam Team ID on nba.com

isB2B Logical for back-to-back game

isB2BFirst Logical for first game of back-to-back game

isB2BSecond Logical for second game of back-to-back game

locationGame Home (H) or Away (A)

slugMatchup Team One vs. Team Two

slugTeam Team abbreviation

countDaysRestTeam Days between previous game and this game

countDaysNextGameTeam Days until next game

slugOpponent Opponent abbreviation

slugTeamWinner Team that won (abbreviation)

slugTeamLoser Team that lost (abbreviation)

outcomeGame Result for slugTeam (W or L)

isWin Logical for slugTeam winning

fgmTeam slugTeam field goals made

fgaTeam slugTeam field goal attempts

pctFGTeam slugTeam field goal percentage

fg3mTeam slugTeam three point field goals made

fg3aTeam slugTeam three point field goal attempts

pctFG3Team slugTeam three point field goal percentage

pctFTTeam slugTeam free throw percentage

hasVideo Logical if game video exists

fg2mTeam slugTeam two point field goals made

fg2aTeam slugTeam two point field goal attempts

pctFG2Team slugTeam two point field goal percentage

minutesTeam Total minutes played

ftmTeam slugTeam free throws made

ftaTeam slugTeam free throw attempts

orebTeam slugTeam offensive rebounds

drebTeam slugTeam defensive rebounds

trebTeam slugTeam total rebounds

astTeam slugTeam total assists

stlTeam slugTeam total steals

blkTeam slugTeam total blocks

tovTeam slugTeam total turnovers

pfTeam slugTeam total personal fouls

ptsTeam slugTeam total points scored

plusminusTeam Margin of game as slugTeam score minus slugOpponent score

urlTeamSeasonLogo url of slugTeam logo

Source

http://asbcllc.com/nbastatR/reference/game_logs.html

---

nba_games_2023   *NBA Game Logs for the 2022-23 Season*

Description

A dataset containing the NBA Games table on nba.com

Usage

nba_games_2023

Format

A data frame with 2460 rows and 29 variables:

season_id Season in which the game was played (YYYY)

team_id Team ID on nba.com

team_abbreviation Team abbreviation on nba.com

team_name Team name on nba.com

game_id Game ID on nba.com

game_date Date in YYYY-MM-DD

matchup Team One vs. Team Two

wl Win or Loss

min Minutes in the game

fgm Team Field goals made

fga Team Field goal attempts

fg_pct Team field goal percentage

fg3m Team three point field goals made

fg3a Team three point field goal attempts

fg3_pct Team three point field goal percentage

ftm Team free throws made

fta Team free throw attempts

ft_pct Team free throw percentage

oreb Team offensive rebounds

dreb Team defensive rebounds

reb Team total rebounds

ast Team total assists

stl Team total steals

blk Team total blocks

tov Team total turnovers

pf Team total personal fouls

pts Team total points scored

plus_minus Margin of game as Team score minus Opponent score

video_available Logical if game video exists

Source

http://asbcllc.com/nbastatR/reference/game_logs.html

nba_nuggets_shots	*2014/5 - 2022/23 Shot Data for the NBA's Denver Nuggets*

Description

A dataset containing seven seasons of Denver Nuggets shot data from NBA.com

Usage

```
nba_nuggets_shots
```

Format

A data frame with 62196 rows and 27 variables:

yearSeason Season in which the game was played (YYYY)

slugSeason Season in which the game was played (YYYY-YY)

idTeam Team ID on nba.com

idPlayer Player ID on nba.com

typeGrid A string showing grid type

namePlayer Player name

nameTeam Full team name

typeEvent Made or Missed Shot

typeAction Type of shot, e.g. Jump Shot

typeShot Two or three point shot

dateGame Date in YYYY-MM-DD

slugTeamHome Home Team abbreviation

slugTeamAway Away Team abbreviation

idGame Game ID on nba.com

idEvent Event ID within the game on nba.com

numberPeriod Period in game in which the shot was taken

minutesRemaining Minutes remaining in the period in which the shot was taken

zoneBasic Description of area on court where shot was taken

nameZone Name of the zone

slugZone Abbreviation of shot zone

zoneRange Distance of shot in categories

locationX X cordinate where shot was taken

locationY Y cordinate where shot was taken

secondsRemaining Seconds remainin when shot was taken

distanceShot Distance of the shot in feet

isShotAttempted Logical for shot taken

isShotMade Logical for make/miss of shot

Source

http://asbcllc.com/nbastatR/reference/teams_shots.html

---

nhl_team_stats_2021 *2021-2 NHL Team Statistics*

Description

A dataset containing the NHL Statistics

Usage

nhl_team_stats_2021

Format

A data frame with 32 rows and 35 variables:

stat_games_played Games played

stat_wins Wins

stat_losses Losses

stat_ot Overtimes

stat_pts Points

stat_pt_pctg Point Percentage

stat_goals_per_game Goals per game

stat_goals_against_per_game Goals against per game

stat_ev_gga_ratio Even strength gga ratio

stat_power_play_percentage Power play percentage

stat_power_play_goals Power play goals

stat_power_play_goals_against Power play goals against

stat_power_play_opportunities Power play opportunities

stat_penalty_kill_percentage Penalty kill percentage

stat_shots_per_game Shots per game

stat_shots_allowed Shots allowed

stat_win_score_first Wins when scoring first

stat_win_opp_score_first Wins when opponent scores first

stat_win_lead_first_per Wins when leading after first period

stat_win_lead_second_per Wins when leading after second period

stat_win_outshoot_opp Wins when outshooting opponent

stat_win_outshot_by_opp Wins when outshot by opponent

stat_face_offs_taken Face-offs taken

stat_face_offs_won Face-offs won

stat_face_offs_lost Face-offs lost

stat_face_off_win_percentage Face-off win percentage

stat_shooting_pctg Shooting percentage

stat_save_pctg Save percentage

stat_penalty_kill_opportunities Penalty kill opportunities

stat_save_pct_rank Save percentage rank

stat_shooting_pct_rank Shooting percentage rank

team_id Team ID

team_name Team name

team_link Team link

season Season

Source

https://www.nhl.com/stats/

---

nwsl_player_stats   *2022 NWSL Player Statistics*

Description

A dataset containing individual player statistics for the National Women's Soccer League

Usage

```
nwsl_player_stats
```

Format

A data frame with 314 rows and 13 variables:

player Player name

nation Player home country

pos Player position

squad Player team

age Age of player

mp Matches played

starts Number of matches in which player started the game

min Total minutes played in the season

xGp90 Expected goals per ninety minutes

xAp90 Expected assists per ninety minutes

xGxAp90 Expected goals plus assists per ninety minutes

npxGp90 Expected goals minus penalty goals per ninety minutes

npxGxAp90 Expected goals plus assists minus penalty goals per ninety minutes

Source

<https://fbref.com/en/comps/182/stats/NWSL-Stats>

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ow_golf_rankings *2022 Official World Golf Rankings*

Description

A dataset containing the Official World Golf Rankings in June 2022

Usage

```
ow_golf_rankings
```

Format

A data frame with 300 rows and 2 variables:

WGR_June_2022 official golf world ranking

Player_initial_last initial of first name and complete last name of player

Source

<https://www.owgr.com/archive/archive.sps?iType=1747>

---

pga_tournaments *PGA Tournament Data*

Description

A dataset containing PGA Tournament Data from 2022 season

Usage

```
pga_tournaments
```

Format

A data frame with 3676 rows and 34 variables:

Player_initial_last initial of first name and complete last name of player
tournament.id tournament ID
player.id plyaer ID
hole_par par across all holes played by the player
strokes strokes taken on all holes played by the player
hole_DKP Draftkings points on holes
hole_FDP Fanduel points on the holes
hole_SDP Showdown points on the holes
streak_DKP Draftkings points on streaks
streak_FDP Fanduel points on streaks
streak_SDP Showdown points on streaks
n_rounds number of rounds played
made_cut player made the cut or not
pos finishing position of player
finish_DKP Draftkings points on the finishing position
finish_FDP Fanduel points on the finishing position
finish_SDP Showdown points on the finishing position
total_DKP total Draftkings points for the tournament
total_FDP total Fanduel points for the tournament
total_SDP total Showdown points for the tournament
player player full name
tournament.name tournament full name
course course name
date data of tournament
purse total prize money (in millions)
season year of season
no_cut Not sure
Finish finishing position
sg_putt strokes gained from putting
sg_arg strokes gained around the green
sg_app strokes gained on approach shots
sg_ott strokes gained off the tee
sg_t2g strokes gained tee to green
sg_total total strokes gained

Source

Courtesy of Matt Courchene of Datagolf.com

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