

Unveiling Online Gambling Behaviour: A Descriptive Analysis of Consumer Data

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Gamble
Aware

Contents

- › Research context
- › Data description & coverage
- › Customers & activity types
- › Patterns of play
- › Further analysis
- › Novelty & implications
- › Next steps

Conflict of Interest

- › **Co-funded by:** ESRC UBEL DTP and GambleAware
- › **Data provider:** anonymous operator
 - › No say on research design
 - › Output checks prior to research dissemination

Research Context

Rationale

› **Survey data**

- Health survey for England (HSE); Annual GB Treatment and Support Surveys
- Measurement error: self-reported → social desirability bias
- Selection bias: online survey attracts ‘tech savvy’ population
- High cost → small sample size → **small sampling fraction**

› **Consumer data**

- Large sample size; spatially & temporally granular; regular intervals
- Reveals accurate patterns of play



Research Aim

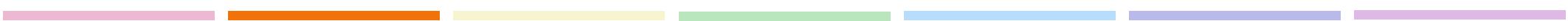
- › Create a typology of online gambling behaviour
Data-driven, transparent and open to scrutiny
- › Profile the “at-risk” gamblers identified
Compare with the existing measures of “at-risk” gamblers
- › Offer new way to conceptualise & measure “at-risk” online gambling behaviour



Data Description and Coverage

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- › **Study period:** 1st January 2022 to 31st December 2022
- › **Geography:** England, Wales and Scotland (i.e., Great Britain)



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 - a) engaged in gameplay using actual money AND
 - b) made multiple deposits ... on multiple days throughout the year 2022

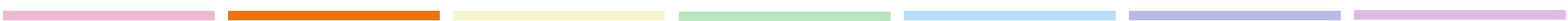


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'Genuine' customers
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~ 270 million

Bet slips transacted
across GB in 2022



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Bet slips transacted
across GB in 2022

~ 80 million

Gaming sessions played
across GB in 2022



Data Coverage

- › England: **84.34%** (GB 18+ population: **86.67%**)
- › Scotland: **10.70%** (GB 18+ population: **8.54%**)
- › Wales: **4.96%** (GB 18+ population: **4.79%**)
- › Online customers come from...

76.6%

Of the GB postcode
(> 3 in 4)

100%

Of the GB Local Authority
District

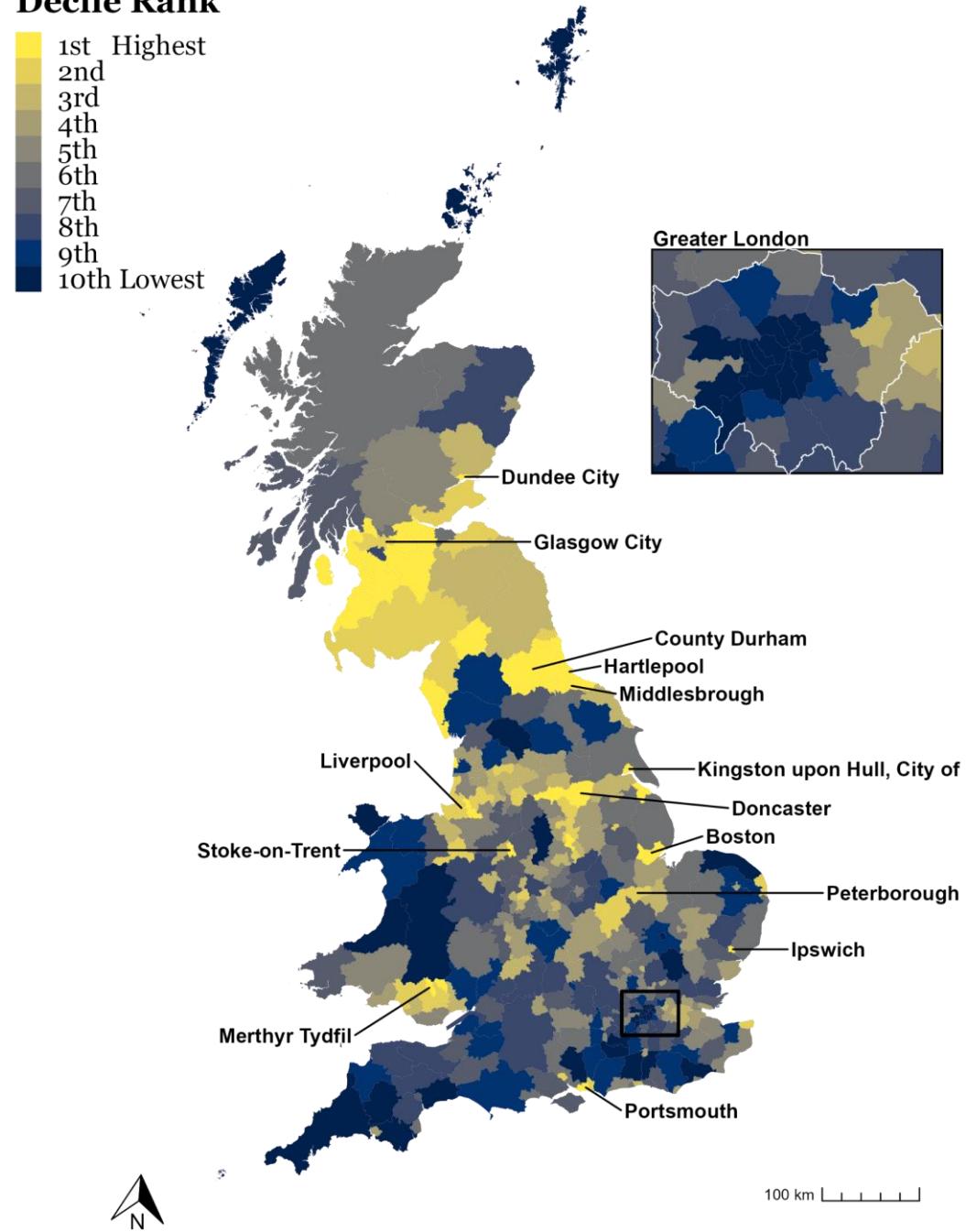


Customer Penetration Map

GB Region	Penetration Rate (%)	Prop. of Customers (%)
North East	3.84	6.75
North West	2.69	13.03
Yorkshire and The Humber	2.66	9.53
East Midlands	2.47	7.93
West Midlands	2.38	9.16
South West	1.83	6.95
East of England	2.18	8.96
South East	2.05	12.42
London	1.67	9.62
Scotland	2.94	10.70
Wales	2.43	4.96

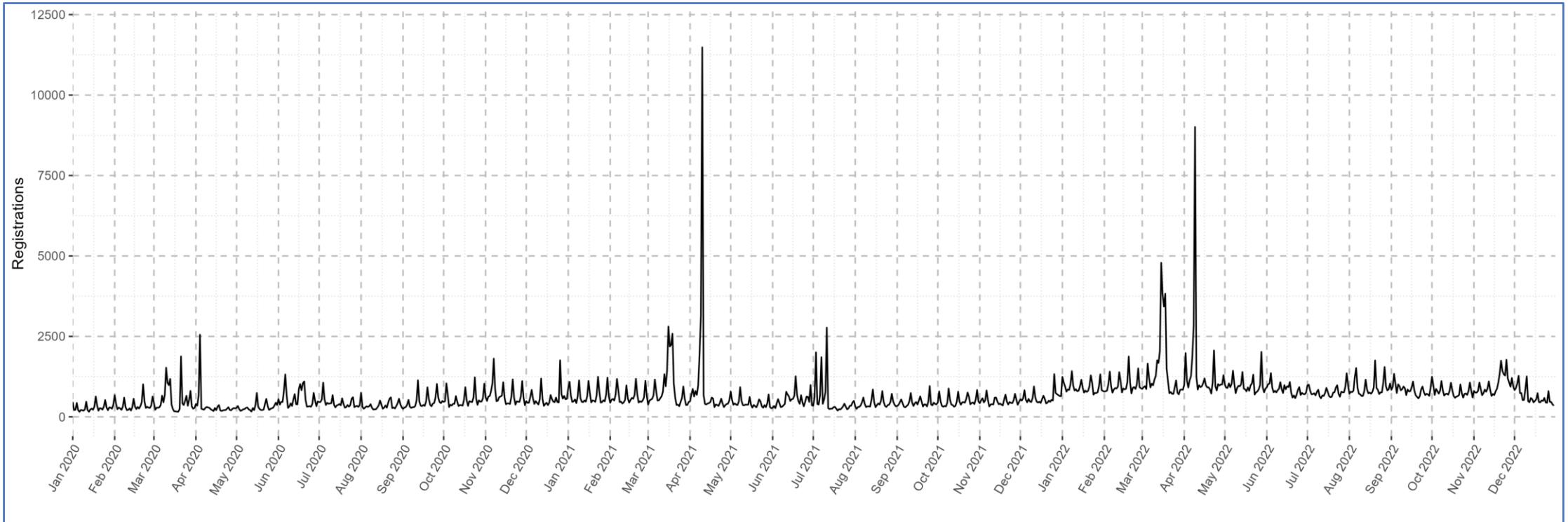
Decile Rank

- 1st Highest
 2nd
 3rd
 4th
 5th
 6th
 7th
 8th
 9th
 10th Lowest

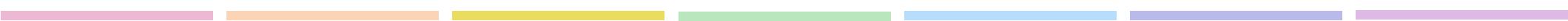
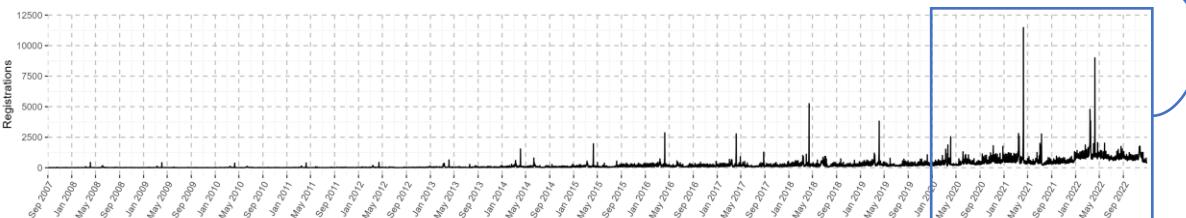


Customers & Activity Types

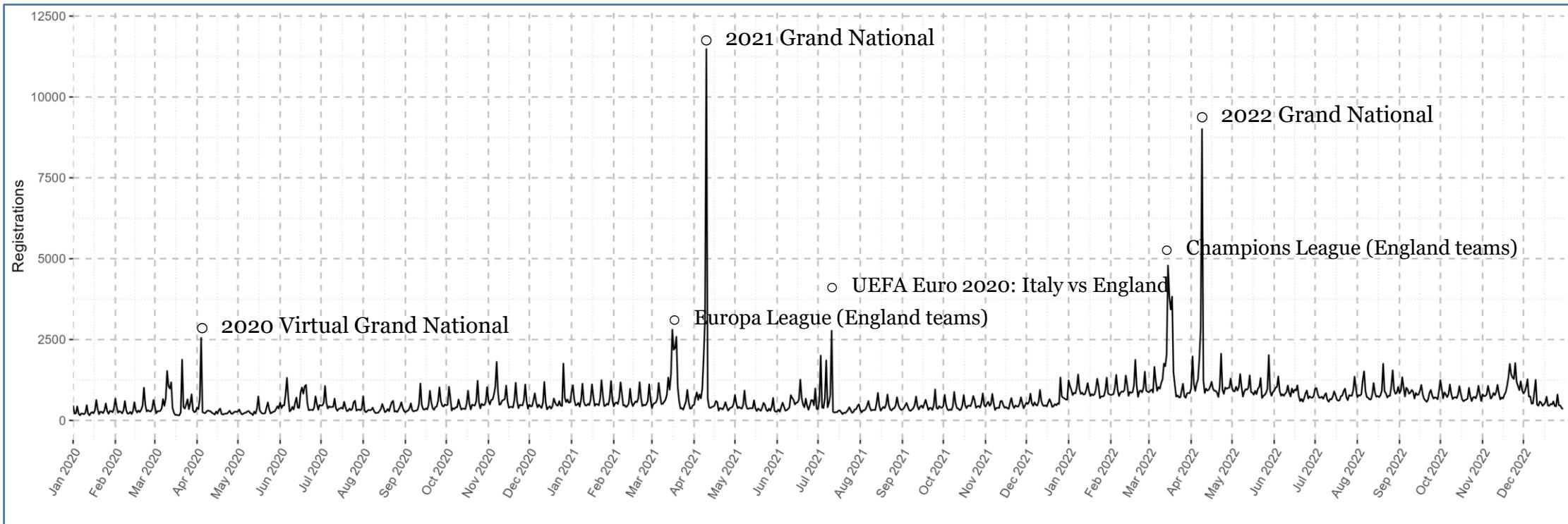
Timeline of Customer Registrations



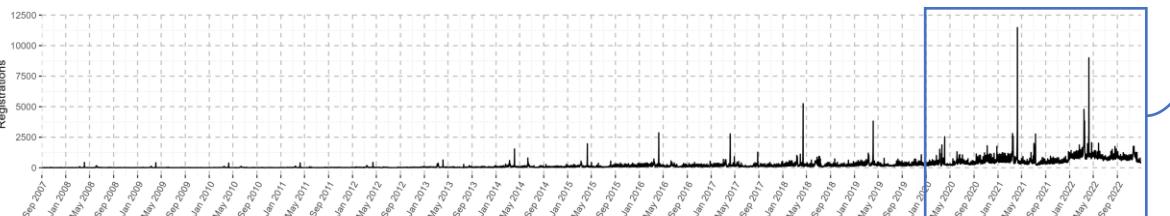
All Customers



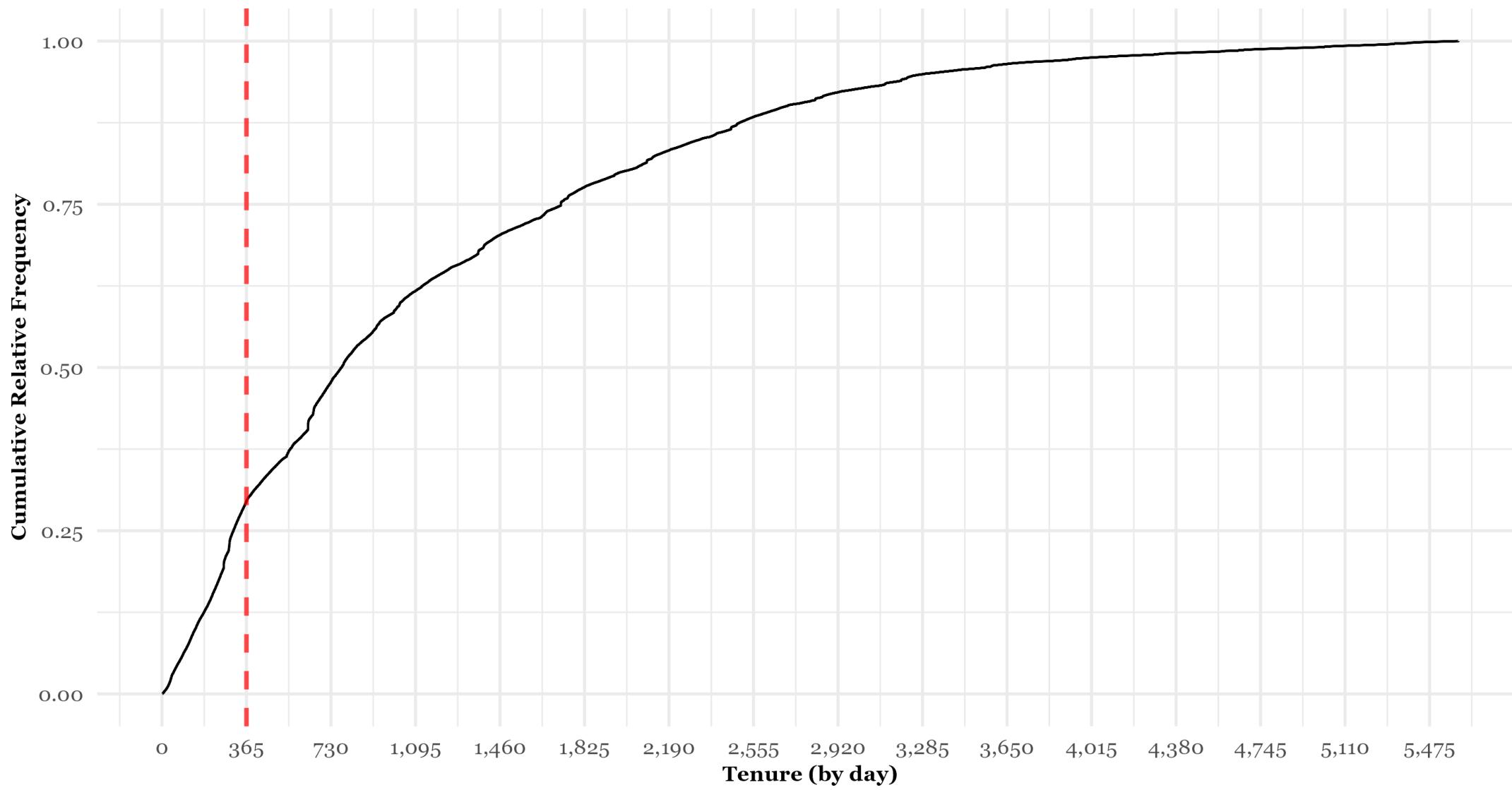
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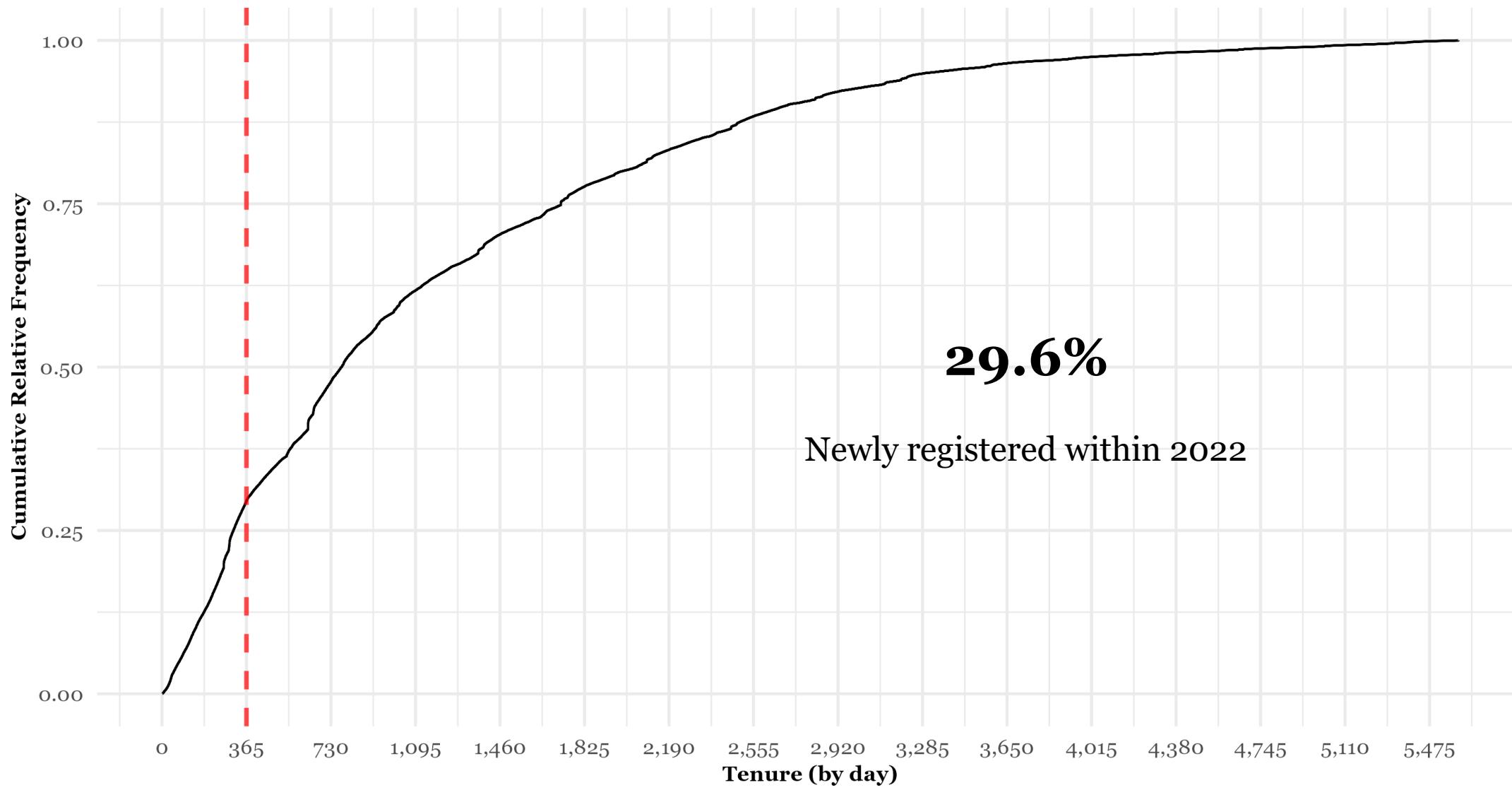
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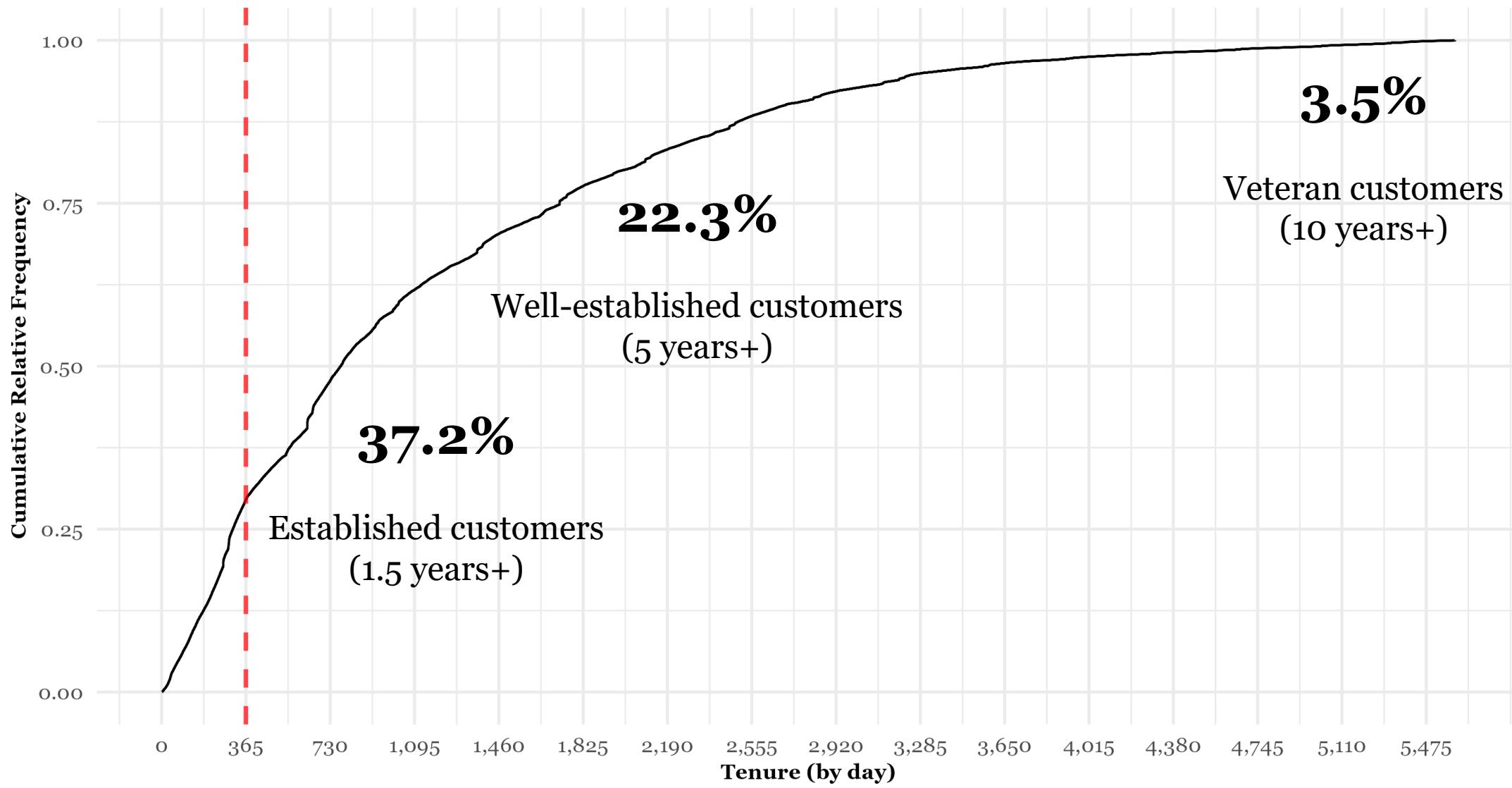
Cumulative Relative Frequency Plot of Registered Days



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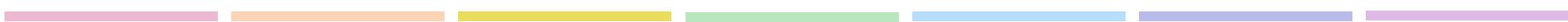


Activity Types: Betting

13

Betting Activity Types

Activity Name	Participant Rate (%)			
	All Customers [100%]	Betting-Exclusive [15.76%]	Gaming-Exclusive [21.90%]	Participated in Both [61.34%]
Betting				
Football	63.45	76.10	-	75.04
Horse Racing	52.44	67.54	-	60.40
Combat Sports	11.85	12.56	-	14.59
Multiple Sports	11.14	9.76	-	14.44
Other Sports	10.51	12.40	-	12.51
Virtual Sports	8.85	3.55	-	12.95
Greyhounds	8.00	6.80	-	10.44
Golf	6.34	9.59	-	6.80
Tennis	6.32	7.12	-	7.64
Darts	6.19	5.76	-	7.91
Rugby	4.41	6.36	-	4.83
Basketball	3.87	3.36	-	5.02
Specials	3.83	5.07	-	4.37

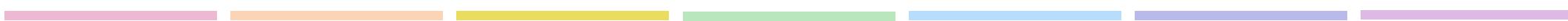


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Activity Types: Gaming

11

Gaming Activity Types

Activity Name	Participant Rate (%)			
	All Customers [100%]	Betting-Exclusive [15.76%]	Gaming-Exclusive [21.90%]	Participated in Both [61.34%]
Gaming				
Slot	60.33	-	82.22	75.99
Multiple Games	56.89	-	80.64	70.86
Jackpot Slots	45.35	-	49.85	60.14
Live Game Shows	29.73	-	15.32	43.82
Bingo	27.61	-	17.92	39.76
Roulette	20.55	-	9.20	30.65
Live Dealer Roulette	19.24	-	9.48	28.46
Live Dealer Others	7.81	-	4.39	11.42
Table Game Others	5.14	-	3.09	7.46
Instant Wins	4.84	-	4.71	6.57
Poker	1.79	-	0.96	2.63

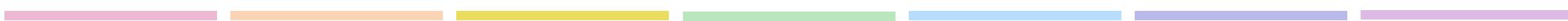


Activity Types: Gaming

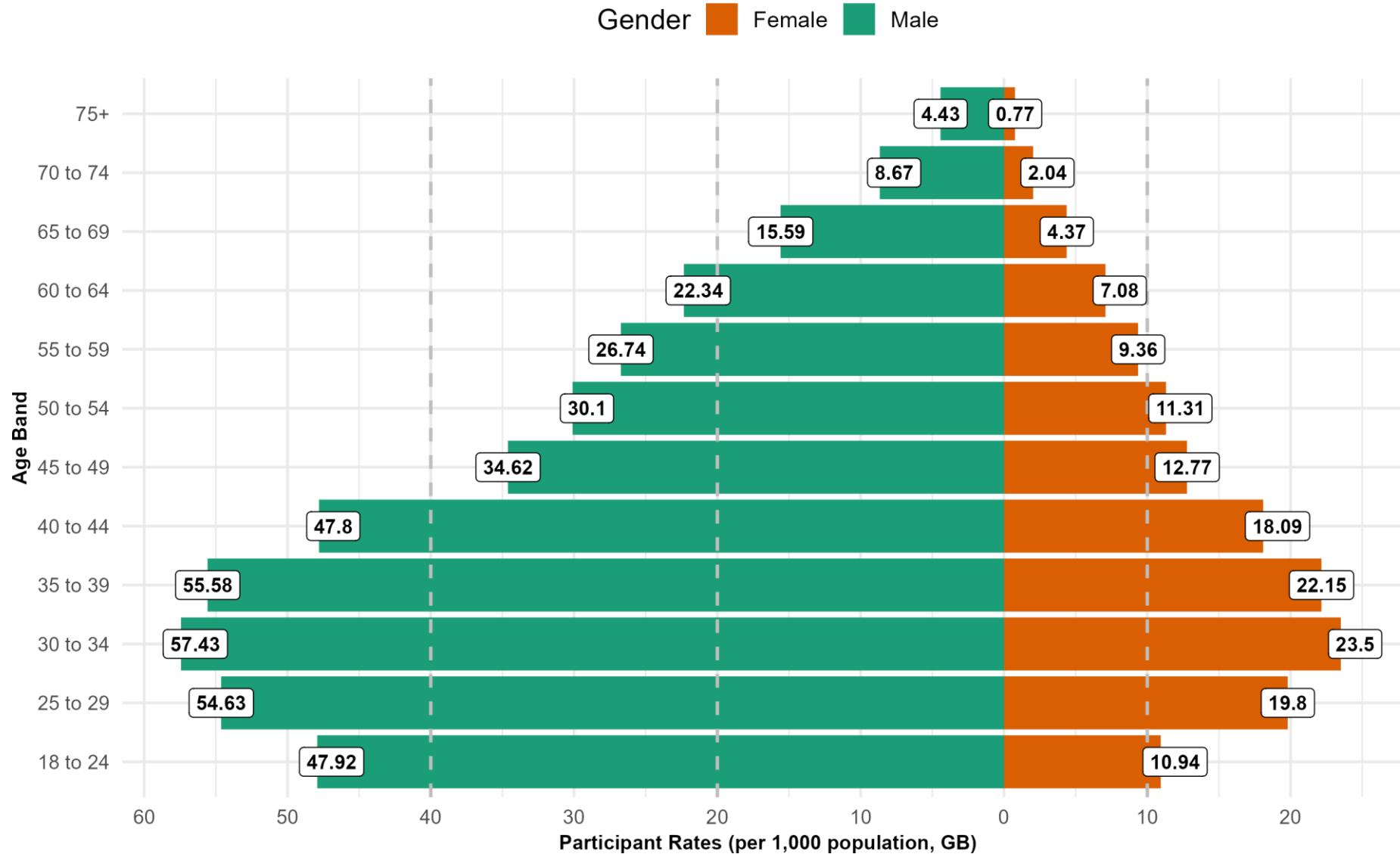
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Gaming Activity Types

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Gaming				
Slot	60.33	-	82.22	75.99
Multiple Games	56.89	-	80.64	70.86
Jackpot Slots	45.35	-	49.85	60.14
Live Game Shows	29.73	-	15.32	43.82
Bingo	27.61	-	17.92	39.76
Roulette	20.55	-	9.20	30.65
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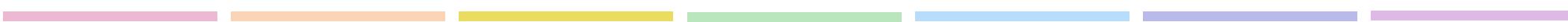
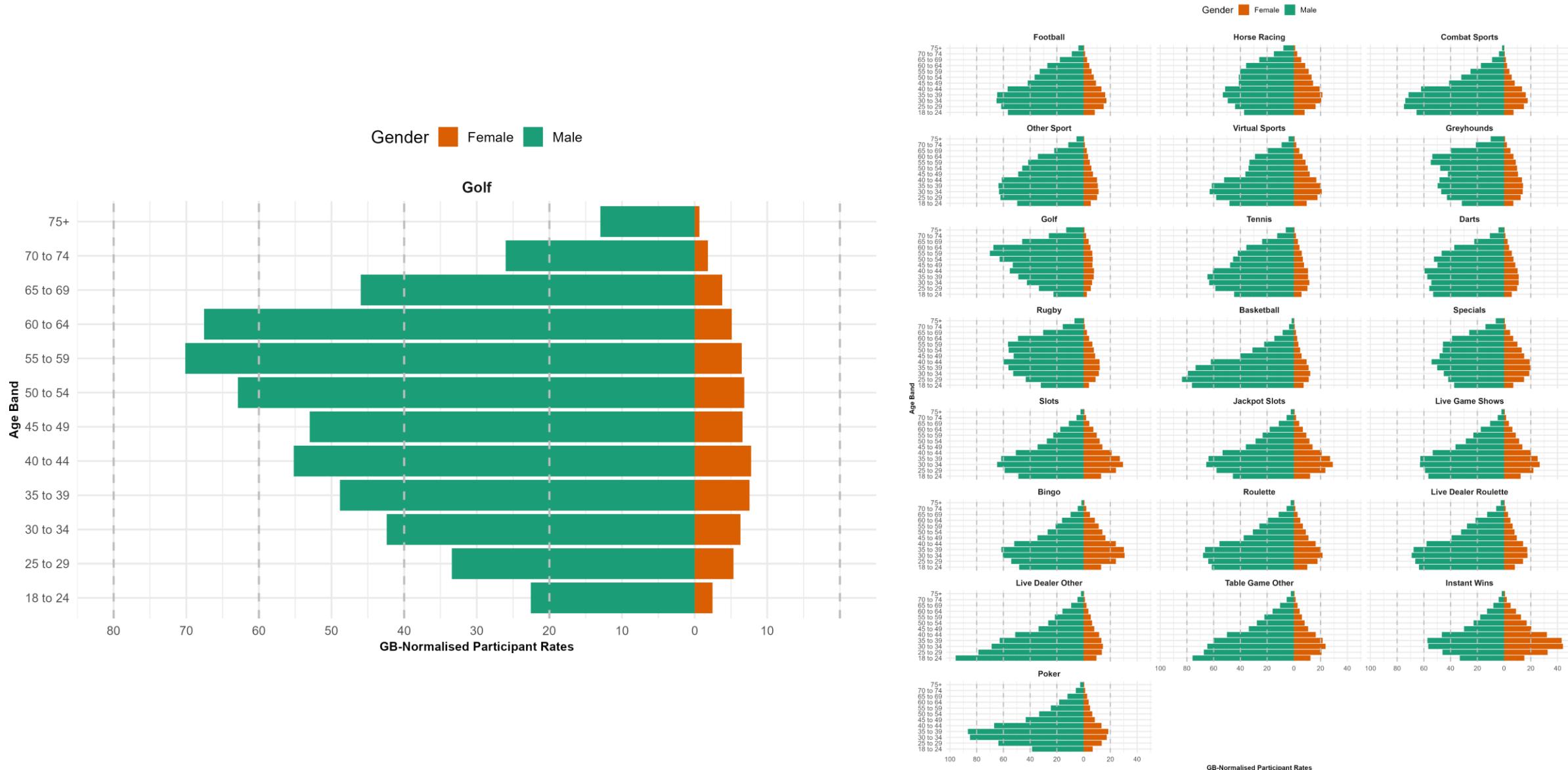
Participant Demographics



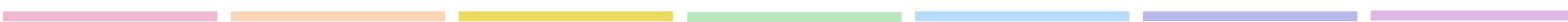
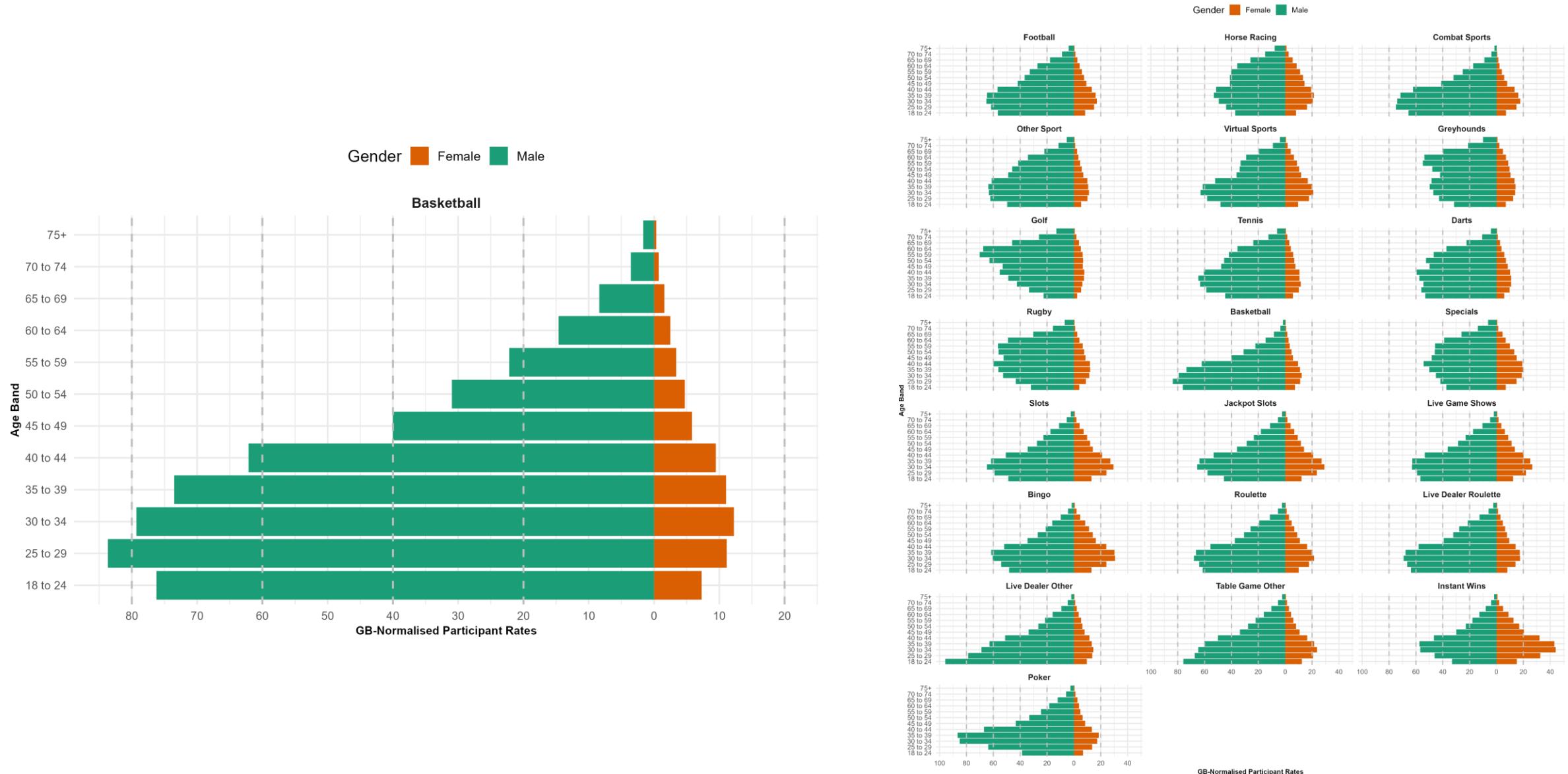
Participant Demographics by Activity Type



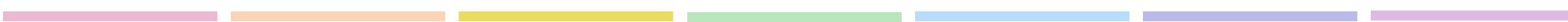
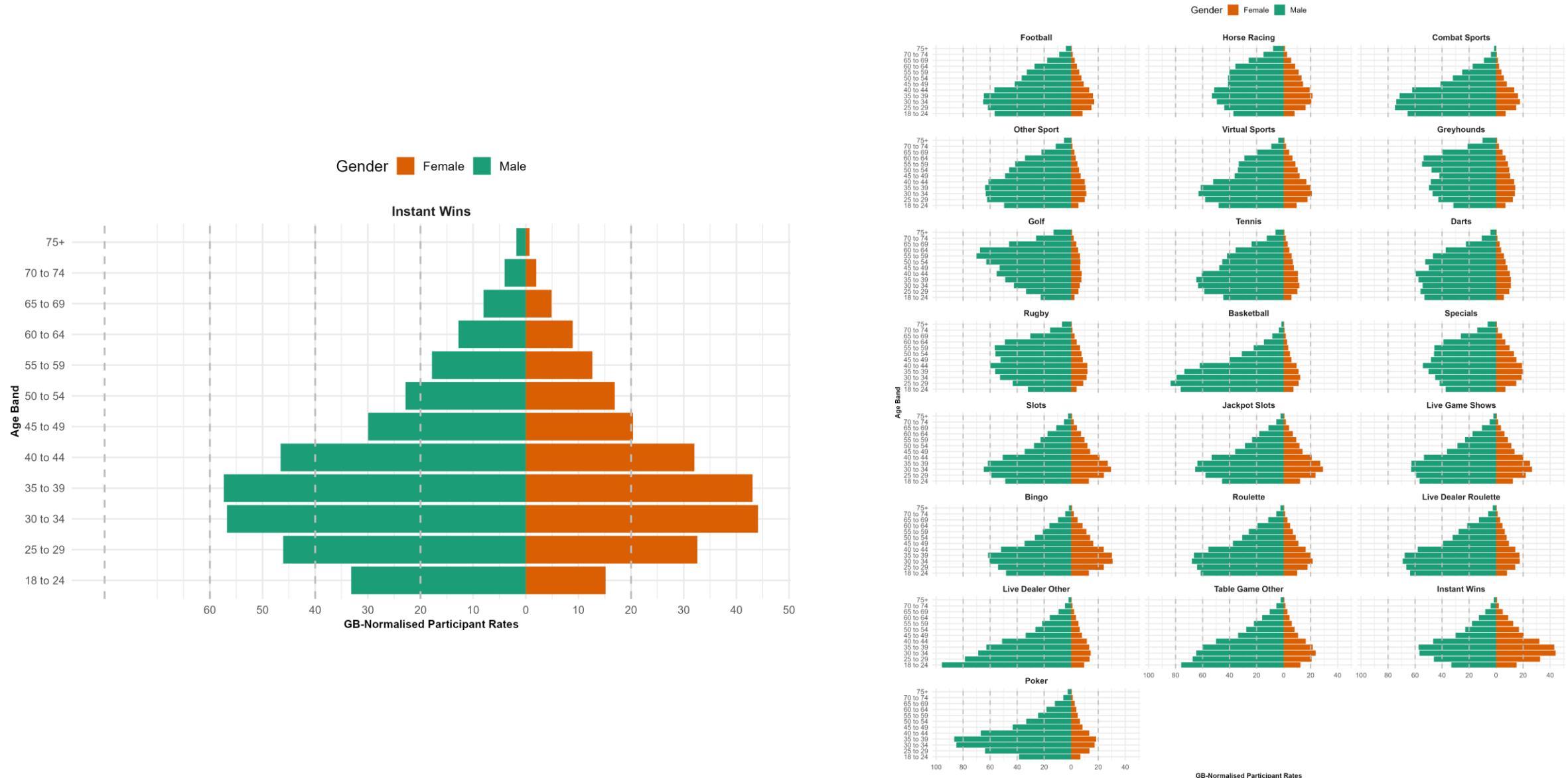
Participant Demographics by Activity Type



Participant Demographics by Activity Type



Participant Demographics by Activity Type



Patterns of Play

Key Themes

- › **Frequency:** 6 variables
- › **Intensity:** 11 variables
- › **Variability:** 15 variables
- › **Riskiness:** 5 variables

Total: 37 variables



Patterns of Play: Frequency

Variable Name	All Customers (100%)			Betting-Exclusive (15.76%)			Gaming-Exclusive (21.90%)			Participated in Both (61.34%)		
	Mean	Median	IQR	Mean	Median	IQR	Mean	Median	IQR	Mean	Median	IQR
General												
➤ Tenure (in days)	1,155.5	775.0	1,414.0	1,385.0	1,002.0	1,771.0	782.6	476.0	817.0	1,169.2	799.0	1,386.0
Avg. monthly deposit amount (£)	-	1.0	-	-	0.3	-	-	1.5	-	-	1.4	-
Avg. monthly deposit quantity	7.6	1.9	6.7	2.5	0.6	1.6	8.2	2.2	6.8	9.3	2.8	8.9
Avg. deposit amount per deposit-days (£)	-	1.0	-	-	0.8	-	-	1.6	-	-	1.0	-
➤ Avg. gap between deposit-days	19.8	7.7	19.4	31.6	15.5	34.5	15.9	5.7	14.5	16.6	6.6	15.7
Std. deviation gap between deposit-days	20.8	11.0	21.5	28.7	16.6	32.1	17.8	9.1	17.7	19.0	10.2	19.1
➤ Withdrawal-deposit ratio	0.3	0.2	0.4	0.2	0.1	0.3	0.2	0.2	0.3	0.3	0.2	0.4
➤ Gambling-deposit ratio	5.2	1.7	2.6	3.6	1.5	2.0	2.1	1.2	0.7	6.6	2.0	3.7
Avg. stake amount per gambling-days (£)	-	1.0	-	-	0.4	-	-	3.8	-	-	1.1	-
Std. deviation stake amount per gambling-days (£)	-	1.0	-	-	0.2	-	-	3.5	-	-	1.3	-
➤ Avg. gap between gambling-days	11.4	3.2	9.8	21.2	8.6	21.5	12.4	4.2	11.2	7.7	2.1	6.1
Std. deviation gap between gambling-days	14.3	6.1	15.0	23.2	12.8	26.3	15.7	7.5	16.0	11.1	4.6	11.3
Avg. monthly loss amount (£)	-	1.0	-	-	0.3	-	-	1.9	-	-	1.3	-
Monthly Loss-Deposit Ratio	0.6	0.4	0.8	0.5	0.5	0.9	0.7	0.6	0.8	0.6	0.4	0.7
➤ Prop. of gambling-active days (%)	23.8	12.4	34.3	11.9	3.8	11.5	14.0	6.0	15.8	30.4	21.4	43.6
Prop. of loss-days (%)	66.6	68.0	31.0	70.4	73.8	31.2	76.0	77.8	28.6	62.9	64.3	27.9
Prop. of popular-day plays (%)	38.2	33.1	24.0	55.7	51.7	40.8	32.0	28.6	23.1	35.3	31.6	15.8
Prop. of weekend plays (%)	36.6	32.5	16.9	47.3	45.5	31.3	29.7	28.6	17.5	34.6	31.6	11.1



Patterns of Play: Frequency

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Avg. stake amount per gambling-days (£)	-	1.0	-	-	0.4	-	-	3.8	-	-	1.1	-
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Std. deviation gap between deposit-days	20.8	11.0	21.5	28.7	16.6	32.1	17.8	9.1	17.7	19.0	10.2	19.1
➤ Withdrawal-deposit ratio	0.3	0.2	0.4	0.2	0.1	0.3	0.2	0.2	0.3	0.3	0.2	0.4
➤ Gambling-deposit ratio	5.2	1.7	2.6	3.6	1.5	2.0	2.1	1.2	0.7	6.6	2.0	3.7
Avg. stake amount per gambling-days (£)	-	1.0	-	-	0.4	-	-	3.8	-	-	1.1	-
Std. deviation stake amount per gambling-days (£)	-	1.0	-	-	0.2	-	-	3.5	-	-	1.3	-
➤ Avg. gap between gambling-days	11.4	3.2	9.8	21.2	8.6	21.5	12.4	4.2	11.2	7.7	2.1	6.1
Std. deviation gap between gambling-days	14.3	6.1	15.0	23.2	12.8	26.3	15.7	7.5	16.0	11.1	4.6	11.3
Avg. monthly loss amount (£)	-	1.0	-	-	0.3	-	-	1.9	-	-	1.3	-
Monthly Loss-Deposit Ratio	0.6	0.4	0.8	0.5	0.5	0.9	0.7	0.6	0.8	0.6	0.4	0.7
➤ Prop. of gambling-active days (%)	23.8	12.4	34.3	11.9	3.8	11.5	14.0	6.0	15.8	30.4	21.4	43.6
Prop. of loss-days (%)	66.6	68.0	31.0	70.4	73.8	31.2	76.0	77.8	28.6	62.9	64.3	27.9
➤ Prop. of popular-day plays (%)	38.2	33.1	24.0	55.7	51.7	40.8	32.0	28.6	23.1	35.3	31.6	15.8
Prop. of weekend plays (%)	36.6	32.5	16.9	47.3	45.5	31.3	29.7	28.6	17.5	34.6	31.6	11.1

Patterns of Play: Frequency

Variable Name	All Customers (100%)			Betting-Exclusive (15.76%)			Gaming-Exclusive (21.90%)			Participated in Both (61.34%)		
	Mean	Median	IQR	Mean	Median	IQR	Mean	Median	IQR	Mean	Median	IQR
General												
➤ Tenure (in days)	1,155.5	775.0	1,414.0	1,385.0	1,002.0	1,771.0	782.6	476.0	817.0	1,169.2	799.0	1,386.0
Avg. monthly deposit amount (£)	-	1.0	-	-	0.3	-	-	1.5	-	-	1.4	-
Avg. monthly deposit quantity	7.6	1.9	6.7	2.5	0.6	1.6	8.2	2.2	6.8	9.3	2.8	8.9
Avg. deposit amount per deposit-days (£)	-	1.0	-	-	0.8	-	-	1.6	-	-	1.0	-
➤ Avg. gap between deposit-days	19.8	7.7	19.4	31.6	15.5	34.5	15.9	5.7	14.5	16.6	6.6	15.7
Std. deviation gap between deposit-days	20.8	11.0	21.5	28.7	16.6	32.1	17.8	9.1	17.7	19.0	10.2	19.1
➤ Withdrawal-deposit ratio	0.3	0.2	0.4	0.2	0.1	0.3	0.2	0.2	0.3	0.3	0.2	0.4
➤ Gambling-deposit ratio	5.2	1.7	2.6	3.6	1.5	2.0	2.1	1.2	0.7	6.6	2.0	3.7
Avg. stake amount per gambling-days (£)	-	1.0	-	-	0.4	-	-	3.8	-	-	1.1	-
Std. deviation stake amount per gambling-days (£)	-	1.0	-	-	0.2	-	-	3.5	-	-	1.3	-
➤ Avg. gap between gambling-days	11.4	3.2	9.8	21.2	8.6	21.5	12.4	4.2	11.2	7.7	2.1	6.1
Std. deviation gap between gambling-days	14.3	6.1	15.0	23.2	12.8	26.3	15.7	7.5	16.0	11.1	4.6	11.3
Avg. monthly loss amount (£)	-	1.0	-	-	0.3	-	-	1.9	-	-	1.3	-
Monthly Loss-Deposit Ratio	0.6	0.4	0.8	0.5	0.5	0.9	0.7	0.6	0.8	0.6	0.4	0.7
➤ Prop. of gambling-active days (%)	23.8	12.4	34.3	11.9	3.8	11.5	14.0	6.0	15.8	30.4	21.4	43.6
Prop. of loss-days (%)	66.6	68.0	31.0	70.4	73.8	31.2	76.0	77.8	28.6	62.9	64.3	27.9
➤ Prop. of popular-day plays (%)	38.2	33.1	24.0	55.7	51.7	40.8	32.0	28.6	23.1	35.3	31.6	15.8
Prop. of weekend plays (%)	36.6	32.5	16.9	47.3	45.5	31.3	29.7	28.6	17.5	34.6	31.6	11.1



Patterns of Play: Intensity

Variable Name	All Customers (100%)			Betting-Exclusive (15.76%)			Gaming-Exclusive (21.90%)			Participated in Both (61.34%)		
	Mean	Median	IQR	Mean	Median	IQR	Mean	Median	IQR	Mean	Median	IQR
General												
Tenure (in days)	1,155.5	775.0	1,414.0	1,385.0	1,002.0	1,771.0	782.6	476.0	817.0	1,169.2	799.0	1,386.0
➤ Avg. monthly deposit amount (£)	-	1.0	-	-	0.3	-	-	1.5	-	-	1.4	-
➤ Avg. monthly deposit quantity	7.6	1.9	6.7	2.5	0.6	1.6	8.2	2.2	6.8	9.3	2.8	8.9
➤ Avg. deposit amount per deposit-days (£)	-	1.0	-	-	0.8	-	-	1.6	-	-	1.0	-
Avg. gap between deposit-days	19.8	7.7	19.4	31.6	15.5	34.5	15.9	5.7	14.5	16.6	6.6	15.7
Std. deviation gap between deposit-days	20.8	11.0	21.5	28.7	16.6	32.1	17.8	9.1	17.7	19.0	10.2	19.1
Withdrawal-deposit ratio	0.3	0.2	0.4	0.2	0.1	0.3	0.2	0.2	0.3	0.3	0.2	0.4
Gambling-deposit ratio	5.2	1.7	2.6	3.6	1.5	2.0	2.1	1.2	0.7	6.6	2.0	3.7
➤ Avg. stake amount per gambling-days (£)	-	1.0	-	-	0.4	-	-	3.8	-	-	1.1	-
Std. deviation stake amount per gambling-days (£)	-	1.0	-	-	0.2	-	-	3.5	-	-	1.3	-
Avg. gap between gambling-days	11.4	3.2	9.8	21.2	8.6	21.5	12.4	4.2	11.2	7.7	2.1	6.1
Std. deviation gap between gambling-days	14.3	6.1	15.0	23.2	12.8	26.3	15.7	7.5	16.0	11.1	4.6	11.3
➤ Avg. monthly loss amount (£)	-	1.0	-	-	0.3	-	-	1.9	-	-	1.3	-
Monthly Loss-Deposit Ratio	0.6	0.4	0.8	0.5	0.5	0.9	0.7	0.6	0.8	0.6	0.4	0.7
Prop. of gambling-active days (%)	23.8	12.4	34.3	11.9	3.8	11.5	14.0	6.0	15.8	30.4	21.4	43.6
Prop. of loss-days (%)	66.6	68.0	31.0	70.4	73.8	31.2	76.0	77.8	28.6	62.9	64.3	27.9
Prop. of popular-day plays (%)	38.2	33.1	24.0	55.7	51.7	40.8	32.0	28.6	23.1	35.3	31.6	15.8
Prop. of weekend plays (%)	36.6	32.5	16.9	47.3	45.5	31.3	29.7	28.6	17.5	34.6	31.6	11.1



Patterns of Play: Intensity

Variable Name	All Customers (100%)			Betting-Exclusive (15.76%)			Gaming-Exclusive (21.90%)			Participated in Both (61.34%)		
	Mean	Median	IQR	Mean	Median	IQR	Mean	Median	IQR	Mean	Median	IQR
General												
Tenure (in days)	1,155.5	775.0	1,414.0	1,385.0	1,002.0	1,771.0	782.6	476.0	817.0	1,169.2	799.0	1,386.0
➤ Avg. monthly deposit amount (£)	-	1.0	-	-	0.3	-	-	1.5	-	-	1.4	-
➤ Avg. monthly deposit quantity	7.6	1.9	6.7	2.5	0.6	1.6	8.2	2.2	6.8	9.3	2.8	8.9
➤ Avg. deposit amount per deposit-days (£)	-	1.0	-	-	0.8	-	-	1.6	-	-	1.0	-
Avg. gap between deposit-days	19.8	7.7	19.4	31.6	15.5	34.5	15.9	5.7	14.5	16.6	6.6	15.7
Std. deviation gap between deposit-days	20.8	11.0	21.5	28.7	16.6	32.1	17.8	9.1	17.7	19.0	10.2	19.1
Withdrawal-deposit ratio	0.3	0.2	0.4	0.2	0.1	0.3	0.2	0.2	0.3	0.3	0.2	0.4
Gambling-deposit ratio	5.2	1.7	2.6	3.6	1.5	2.0	2.1	1.2	0.7	6.6	2.0	3.7
➤ Avg. stake amount per gambling-days (£)	-	1.0	-	-	0.4	-	-	3.8	-	-	1.1	-
Std. deviation stake amount per gambling-days (£)	-	1.0	-	-	0.2	-	-	3.5	-	-	1.3	-
Avg. gap between gambling-days	11.4	3.2	9.8	21.2	8.6	21.5	12.4	4.2	11.2	7.7	2.1	6.1
Std. deviation gap between gambling-days	14.3	6.1	15.0	23.2	12.8	26.3	15.7	7.5	16.0	11.1	4.6	11.3
➤ Avg. monthly loss amount (£)	-	1.0	-	-	0.3	-	-	1.9	-	-	1.3	-
Monthly Loss-Deposit Ratio	0.6	0.4	0.8	0.5	0.5	0.9	0.7	0.6	0.8	0.6	0.4	0.7
Prop. of gambling-active days (%)	23.8	12.4	34.3	11.9	3.8	11.5	14.0	6.0	15.8	30.4	21.4	43.6
Prop. of loss-days (%)	66.6	68.0	31.0	70.4	73.8	31.2	76.0	77.8	28.6	62.9	64.3	27.9
Prop. of popular-day plays (%)	38.2	33.1	24.0	55.7	51.7	40.8	32.0	28.6	23.1	35.3	31.6	15.8
Prop. of weekend plays (%)	36.6	32.5	16.9	47.3	45.5	31.3	29.7	28.6	17.5	34.6	31.6	11.1



Patterns of Play: Variability

Variable Name	All Customers (100%)			Betting-Exclusive (15.76%)			Gaming-Exclusive (21.90%)			Participated in Both (61.34%)		
	Mean	Median	IQR	Mean	Median	IQR	Mean	Median	IQR	Mean	Median	IQR
General												
Tenure (in days)	1,155.5	775.0	1,414.0	1,385.0	1,002.0	1,771.0	782.6	476.0	817.0	1,169.2	799.0	1,386.0
Avg. monthly deposit amount (£)	-	1.0	-	-	0.3	-	-	1.5	-	-	1.4	-
Avg. monthly deposit quantity	7.6	1.9	6.7	2.5	0.6	1.6	8.2	2.2	6.8	9.3	2.8	8.9
Avg. deposit amount per deposit-days (£)	-	1.0	-	-	0.8	-	-	1.6	-	-	1.0	-
Avg. gap between deposit-days	19.8	7.7	19.4	31.6	15.5	34.5	15.9	5.7	14.5	16.6	6.6	15.7
➤ Std. deviation gap between deposit-days	20.8	11.0	21.5	28.7	16.6	32.1	17.8	9.1	17.7	19.0	10.2	19.1
Withdrawal-deposit ratio	0.3	0.2	0.4	0.2	0.1	0.3	0.2	0.2	0.3	0.3	0.2	0.4
Gambling-deposit ratio	5.2	1.7	2.6	3.6	1.5	2.0	2.1	1.2	0.7	6.6	2.0	3.7
Avg. stake amount per gambling-days (£)	-	1.0	-	-	0.4	-	-	3.8	-	-	1.1	-
➤ Std. deviation stake amount per gambling-days (£)	-	1.0	-	-	0.2	-	-	3.5	-	-	1.3	-
Avg. gap between gambling-days	11.4	3.2	9.8	21.2	8.6	21.5	12.4	4.2	11.2	7.7	2.1	6.1
➤ Std. deviation gap between gambling-days	14.3	6.1	15.0	23.2	12.8	26.3	15.7	7.5	16.0	11.1	4.6	11.3
Avg. monthly loss amount (£)	-	1.0	-	-	0.3	-	-	1.9	-	-	1.3	-
Monthly Loss-Deposit Ratio	0.6	0.4	0.8	0.5	0.5	0.9	0.7	0.6	0.8	0.6	0.4	0.7
Prop. of gambling-active days (%)	23.8	12.4	34.3	11.9	3.8	11.5	14.0	6.0	15.8	30.4	21.4	43.6
Prop. of loss-days (%)	66.6	68.0	31.0	70.4	73.8	31.2	76.0	77.8	28.6	62.9	64.3	27.9
➤ Prop. of popular-day plays (%)	38.2	33.1	24.0	55.7	51.7	40.8	32.0	28.6	23.1	35.3	31.6	15.8
➤ Prop. of weekend plays (%)	36.6	32.5	16.9	47.3	45.5	31.3	29.7	28.6	17.5	34.6	31.6	11.1



Patterns of Play: Riskiness

Variable Name	All Customers (100%)			Betting-Exclusive (15.76%)			Gaming-Exclusive (21.90%)			Participated in Both (61.34%)		
	Mean	Median	IQR	Mean	Median	IQR	Mean	Median	IQR	Mean	Median	IQR
General												
Tenure (in days)	1,155.5	775.0	1,414.0	1,385.0	1,002.0	1,771.0	782.6	476.0	817.0	1,169.2	799.0	1,386.0
Avg. monthly deposit amount (£)	-	1.0	-	-	0.3	-	-	1.5	-	-	1.4	-
Avg. monthly deposit quantity	7.6	1.9	6.7	2.5	0.6	1.6	8.2	2.2	6.8	9.3	2.8	8.9
Avg. deposit amount per deposit-days (£)	-	1.0	-	-	0.8	-	-	1.6	-	-	1.0	-
Avg. gap between deposit-days	19.8	7.7	19.4	31.6	15.5	34.5	15.9	5.7	14.5	16.6	6.6	15.7
Std. deviation gap between deposit-days	20.8	11.0	21.5	28.7	16.6	32.1	17.8	9.1	17.7	19.0	10.2	19.1
Withdrawal-deposit ratio	0.3	0.2	0.4	0.2	0.1	0.3	0.2	0.2	0.3	0.3	0.2	0.4
Gambling-deposit ratio	5.2	1.7	2.6	3.6	1.5	2.0	2.1	1.2	0.7	6.6	2.0	3.7
Avg. stake amount per gambling-days (£)	-	1.0	-	-	0.4	-	-	3.8	-	-	1.1	-
Std. deviation stake amount per gambling-days (£)	-	1.0	-	-	0.2	-	-	3.5	-	-	1.3	-
Avg. gap between gambling-days	11.4	3.2	9.8	21.2	8.6	21.5	12.4	4.2	11.2	7.7	2.1	6.1
Std. deviation gap between gambling-days	14.3	6.1	15.0	23.2	12.8	26.3	15.7	7.5	16.0	11.1	4.6	11.3
Avg. monthly loss amount (£)	-	1.0	-	-	0.3	-	-	1.9	-	-	1.3	-
➤ Monthly Loss-Deposit Ratio	0.6	0.4	0.8	0.5	0.5	0.9	0.7	0.6	0.8	0.6	0.4	0.7
Prop. of gambling-active days (%)	23.8	12.4	34.3	11.9	3.8	11.5	14.0	6.0	15.8	30.4	21.4	43.6
➤ Prop. of loss-days (%)	66.6	68.0	31.0	70.4	73.8	31.2	76.0	77.8	28.6	62.9	64.3	27.9
Prop. of popular-day plays (%)	38.2	33.1	24.0	55.7	51.7	40.8	32.0	28.6	23.1	35.3	31.6	15.8
Prop. of weekend plays (%)	36.6	32.5	16.9	47.3	45.5	31.3	29.7	28.6	17.5	34.6	31.6	11.1



Patterns of Play: Intensity

Variable Name	All Customers (100%)			Betting-Exclusive (15.76%)			Gaming-Exclusive (21.90%)			Participated in Both (61.34%)		
	Mean	Median	IQR	Mean	Median	IQR	Mean	Median	IQR	Mean	Median	IQR
Betting-Specific												
> Avg. stake amount per bet slip (£)	-	1.0	-	-	1.2	-	-	-	-	0.9	-	-
Std. deviation stake amount per bet slip (£)	-	1.0	-	-	1.1	-	-	-	-	1.0	-	-
> Avg. betting-day bet count	4.2	2.3	2.7	4.2	2.4	2.7	-	-	-	4.2	2.3	2.8
Std. deviation betting-day bet count	3.5	1.7	2.8	3.0	1.5	2.4	-	-	-	3.7	1.8	3.0
Avg. potential return per bet (£)	-	1.0	-	-	1.5	-	-	-	-	0.9	-	-
Std. deviation potential return per bet (£)	-	1.0	-	-	1.3	-	-	-	-	0.9	-	-
Avg. fold quantity per bet	2.8	1.9	2.8	2.5	1.5	2.2	-	-	-	3.0	2.0	3.0
Prop. of acca bets (%)	39.5	32.1	74.3	33.7	20.0	64.4	-	-	-	41.8	36.2	75.3
Prop. of late-night bets (%)	4.9	0.0	2.6	2.8	0.0	0.3	-	-	-	5.7	0.0	3.8
Total no. of activities bet	2.5	2.0	2.0	2.3	2.0	2.0	-	-	-	2.6	2.0	2.0
Gaming-Specific												
> Avg. stake amount per session (£)	-	1.0	-	-	-	-	-	2.2	-	-	0.8	-
Std. deviation stake amount per session (£)	-	1.0	-	-	-	-	-	1.7	-	-	0.8	-
> Avg. gaming-day session count	1.4	1.2	0.6	-	-	-	1.5	1.3	0.6	1.4	1.2	0.5
Std. deviation gaming-day session count	0.6	0.6	0.7	-	-	-	0.6	0.6	0.7	0.6	0.5	0.7
> Avg. session interaction	134.1	65.0	152.2	-	-	-	231.8	141.7	230.0	108.2	49.4	125.7
> Avg. session duration (sec.)	1,317.0	868.0	1,386.1	-	-	-	2,039.8	1,452.7	1,807.1	1,125.8	733.9	1,232.1
Std. deviation session duration (sec.)	1,642.7	1,178.7	1,665.8	-	-	-	2,101.2	1,539.0	1,966.6	1,510.2	1,085.2	1,569.0
Prop. of late-night sessions (%)	19.9	12.5	32.0	-	-	-	22.7	16.7	33.7	19.2	11.5	30.4
Total no. of activities gamed	3.7	3.0	3.0	-	-	-	2.8	3.0	1.0	4.0	4.0	4.0



Patterns of Play: Intensity

Variable Name	All Customers (100%)			Betting-Exclusive (15.76%)			Gaming-Exclusive (21.90%)			Participated in Both (61.34%)		
	Mean	Median	IQR	Mean	Median	IQR	Mean	Median	IQR	Mean	Median	IQR
Betting-Specific												
> Avg. stake amount per bet slip (£)	-	1.0	-	-	1.2	-	-	-	-	0.9	-	-
Std. deviation stake amount per bet slip (£)	-	1.0	-	-	1.1	-	-	-	-	1.0	-	-
> Avg. betting-day bet count	4.2	2.3	2.7	4.2	2.4	2.7	-	-	-	4.2	2.3	2.8
Std. deviation betting-day bet count	3.5	1.7	2.8	3.0	1.5	2.4	-	-	-	3.7	1.8	3.0
Avg. potential return per bet (£)	-	1.0	-	-	1.5	-	-	-	-	0.9	-	-
Std. deviation potential return per bet (£)	-	1.0	-	-	1.3	-	-	-	-	0.9	-	-
Avg. fold quantity per bet	2.8	1.9	2.8	2.5	1.5	2.2	-	-	-	3.0	2.0	3.0
Prop. of acca bets (%)	39.5	32.1	74.3	33.7	20.0	64.4	-	-	-	41.8	36.2	75.3
Prop. of late-night bets (%)	4.9	0.0	2.6	2.8	0.0	0.3	-	-	-	5.7	0.0	3.8
Total no. of activities bet	2.5	2.0	2.0	2.3	2.0	2.0	-	-	-	2.6	2.0	2.0
Gaming-Specific												
> Avg. stake amount per session (£)	-	1.0	-	-	-	-	-	2.2	-	-	0.8	-
Std. deviation stake amount per session (£)	-	1.0	-	-	-	-	-	1.7	-	-	0.8	-
> Avg. gaming-day session count	1.4	1.2	0.6	-	-	-	1.5	1.3	0.6	1.4	1.2	0.5
Std. deviation gaming-day session count	0.6	0.6	0.7	-	-	-	0.6	0.6	0.7	0.6	0.5	0.7
> Avg. session interaction	134.1	65.0	152.2	-	-	-	231.8	141.7	230.0	108.2	49.4	125.7
> Avg. session duration (sec.)	1,317.0	868.0	1,386.1	-	-	-	2,039.8	1,452.7	1,807.1	1,125.8	733.9	1,232.1
Std. deviation session duration (sec.)	1,642.7	1,178.7	1,665.8	-	-	-	2,101.2	1,539.0	1,966.6	1,510.2	1,085.2	1,569.0
Prop. of late-night sessions (%)	19.9	12.5	32.0	-	-	-	22.7	16.7	33.7	19.2	11.5	30.4
Total no. of activities gamed	3.7	3.0	3.0	-	-	-	2.8	3.0	1.0	4.0	4.0	4.0



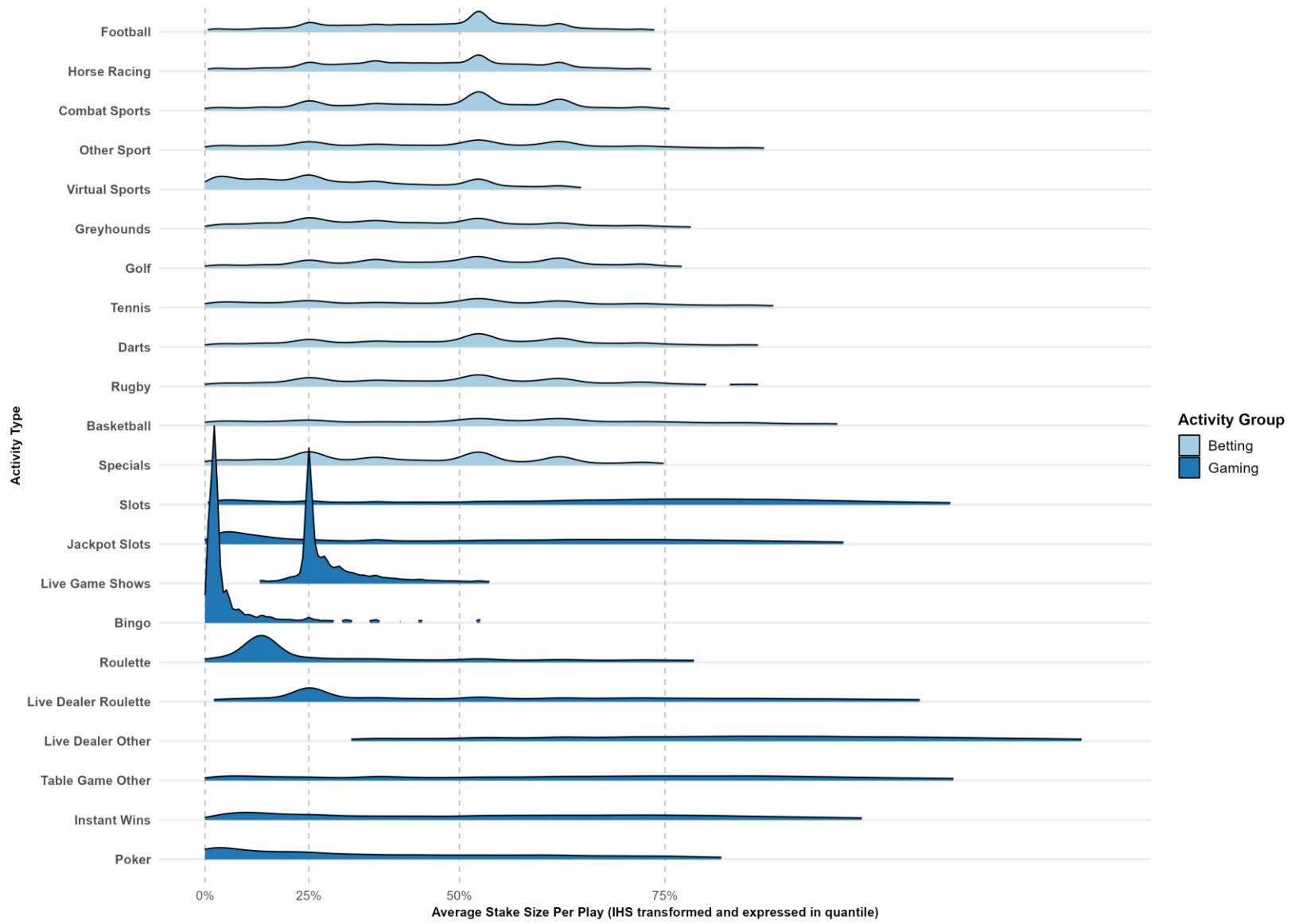
Patterns of Play: Variability

Variable Name	All Customers (100%)			Betting-Exclusive (15.76%)			Gaming-Exclusive (21.90%)			Participated in Both (61.34%)		
	Mean	Median	IQR	Mean	Median	IQR	Mean	Median	IQR	Mean	Median	IQR
Betting-Specific												
Avg. stake amount per bet slip (£)	-	1.0	-	-	1.2	-	-	-	-	0.9	-	-
Std. deviation stake amount per bet slip (£)	-	1.0	-	-	1.1	-	-	-	-	1.0	-	-
Avg. betting-day bet count	4.2	2.3	2.7	4.2	2.4	2.7	-	-	-	4.2	2.3	2.8
Std. deviation betting-day bet count	3.5	1.7	2.8	3.0	1.5	2.4	-	-	-	3.7	1.8	3.0
Avg. potential return per bet (£)	-	1.0	-	-	1.5	-	-	-	-	0.9	-	-
Std. deviation potential return per bet (£)	-	1.0	-	-	1.3	-	-	-	-	0.9	-	-
Avg. fold quantity per bet	2.8	1.9	2.8	2.5	1.5	2.2	-	-	-	3.0	2.0	3.0
Prop. of acca bets (%)	39.5	32.1	74.3	33.7	20.0	64.4	-	-	-	41.8	36.2	75.3
Prop. of late-night bets (%)	4.9	0.0	2.6	2.8	0.0	0.3	-	-	-	5.7	0.0	3.8
Total no. of activities bet	2.5	2.0	2.0	2.3	2.0	2.0	-	-	-	2.6	2.0	2.0
Gaming-Specific												
Avg. stake amount per session (£)	-	1.0	-	-	-	-	-	2.2	-	-	0.8	-
Std. deviation stake amount per session (£)	-	1.0	-	-	-	-	-	1.7	-	-	0.8	-
Avg. gaming-day session count	1.4	1.2	0.6	-	-	-	1.5	1.3	0.6	1.4	1.2	0.5
Std. deviation gaming-day session count	0.6	0.6	0.7	-	-	-	0.6	0.6	0.7	0.6	0.5	0.7
Avg. session interaction	134.1	65.0	152.2	-	-	-	231.8	141.7	230.0	108.2	49.4	125.7
Avg. session duration (sec.)	1,317.0	868.0	1,386.1	-	-	-	2,039.8	1,452.7	1,807.1	1,125.8	733.9	1,232.1
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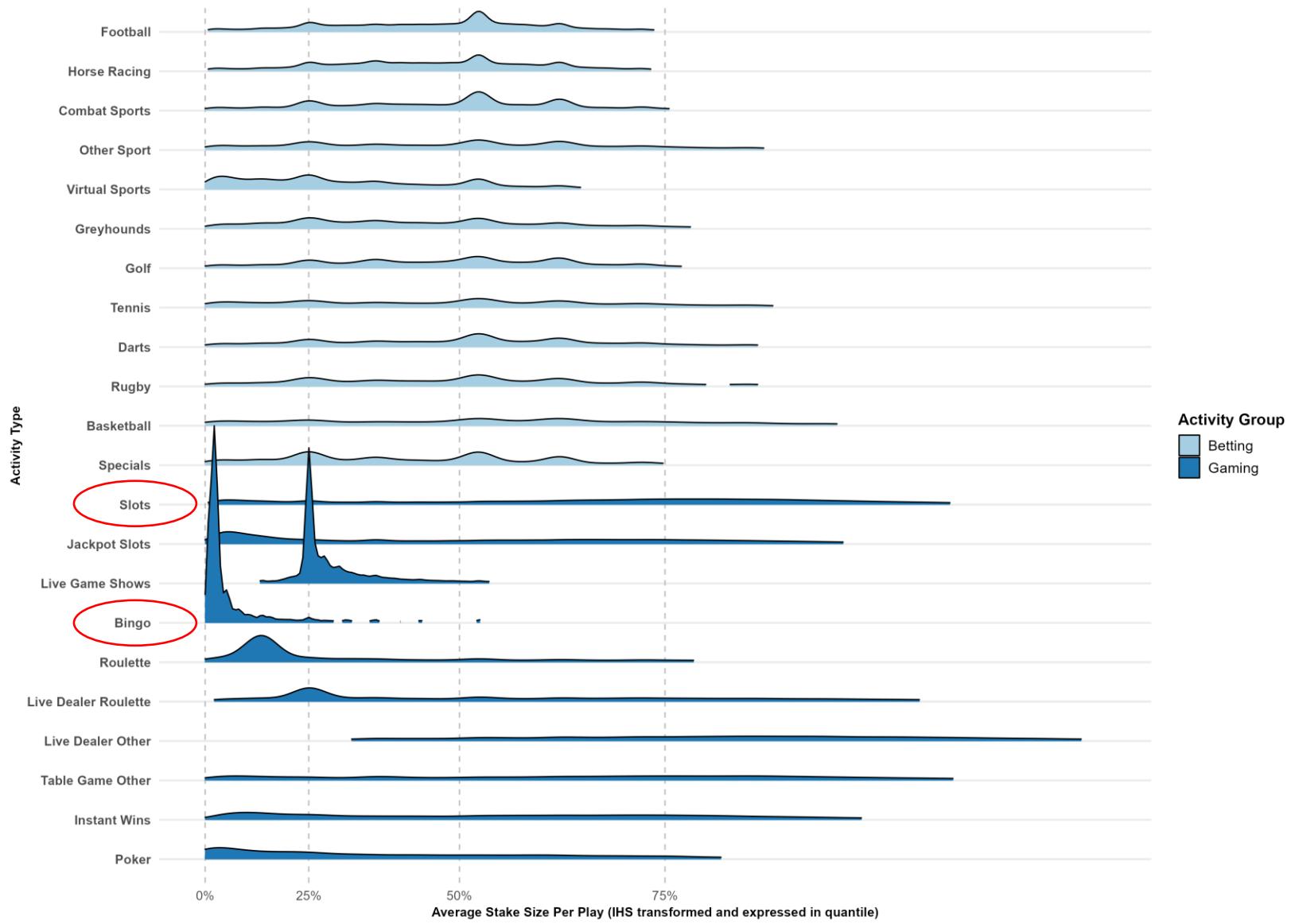
Patterns of Play: Riskiness

Variable Name	All Customers (100%)			Betting-Exclusive (15.76%)			Gaming-Exclusive (21.90%)			Participated in Both (61.34%)		
	Mean	Median	IQR	Mean	Median	IQR	Mean	Median	IQR	Mean	Median	IQR
Betting-Specific												
Avg. stake amount per bet slip (£)	-	1.0	-	-	1.2	-	-	-	-	0.9	-	-
Std. deviation stake amount per bet slip (£)	-	1.0	-	-	1.1	-	-	-	-	1.0	-	-
Avg. betting-day bet count	4.2	2.3	2.7	4.2	2.4	2.7	-	-	-	4.2	2.3	2.8
Std. deviation betting-day bet count	3.5	1.7	2.8	3.0	1.5	2.4	-	-	-	3.7	1.8	3.0
➤ Avg. potential return per bet (£)	-	1.0	-	-	1.5	-	-	-	-	0.9	-	-
Std. deviation potential return per bet (£)	-	1.0	-	-	1.3	-	-	-	-	0.9	-	-
➤ Avg. fold quantity per bet	2.8	1.9	2.8	2.5	1.5	2.2	-	-	-	3.0	2.0	3.0
➤ Prop. of acca bets (%)	39.5	32.1	74.3	33.7	20.0	64.4	-	-	-	41.8	36.2	75.3
Prop. of late-night bets (%)	4.9	0.0	2.6	2.8	0.0	0.3	-	-	-	5.7	0.0	3.8
Total no. of activities bet	2.5	2.0	2.0	2.3	2.0	2.0	-	-	-	2.6	2.0	2.0
Gaming-Specific												
Avg. stake amount per session (£)	-	1.0	-	-	-	-	2.2	-	-	0.8	-	-
Std. deviation stake amount per session (£)	-	1.0	-	-	-	-	1.7	-	-	0.8	-	-
Avg. gaming-day session count	1.4	1.2	0.6	-	-	-	1.5	1.3	0.6	1.4	1.2	0.5
Std. deviation gaming-day session count	0.6	0.6	0.7	-	-	-	0.6	0.6	0.7	0.6	0.5	0.7
Avg. session interaction	134.1	65.0	152.2	-	-	-	231.8	141.7	230.0	108.2	49.4	125.7
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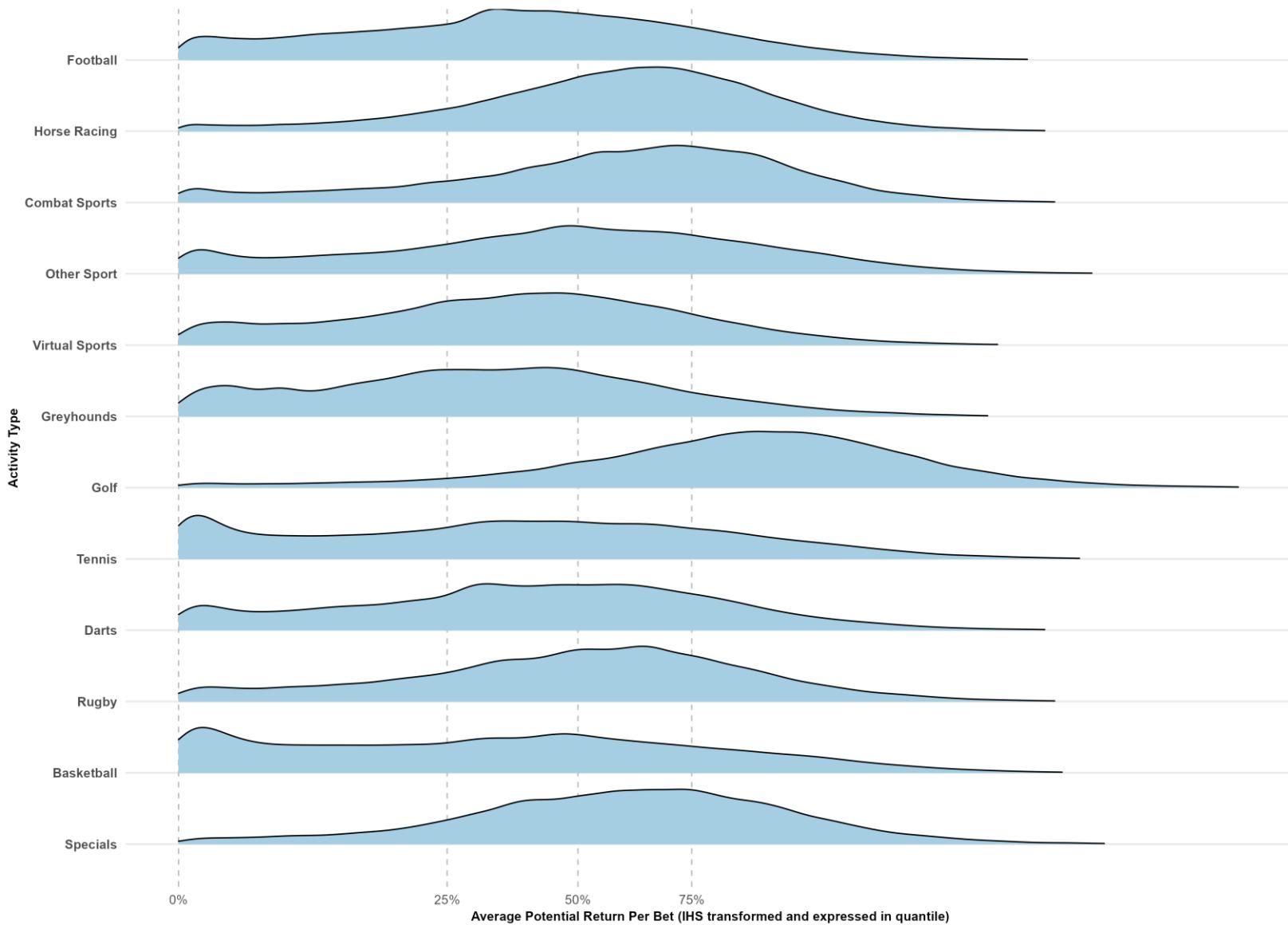
Patterns of Play by Activity Type



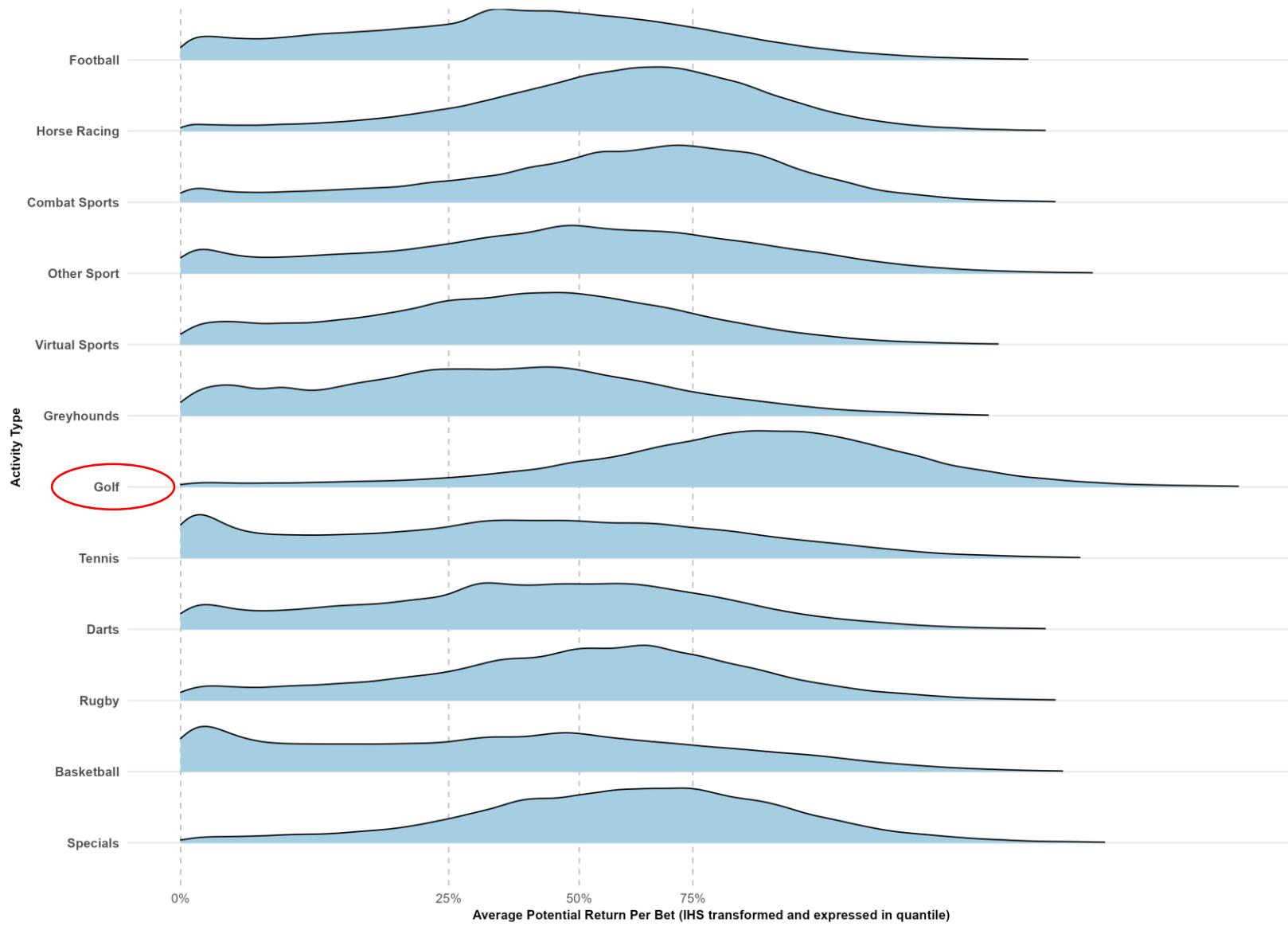
Patterns of Play by Activity Type



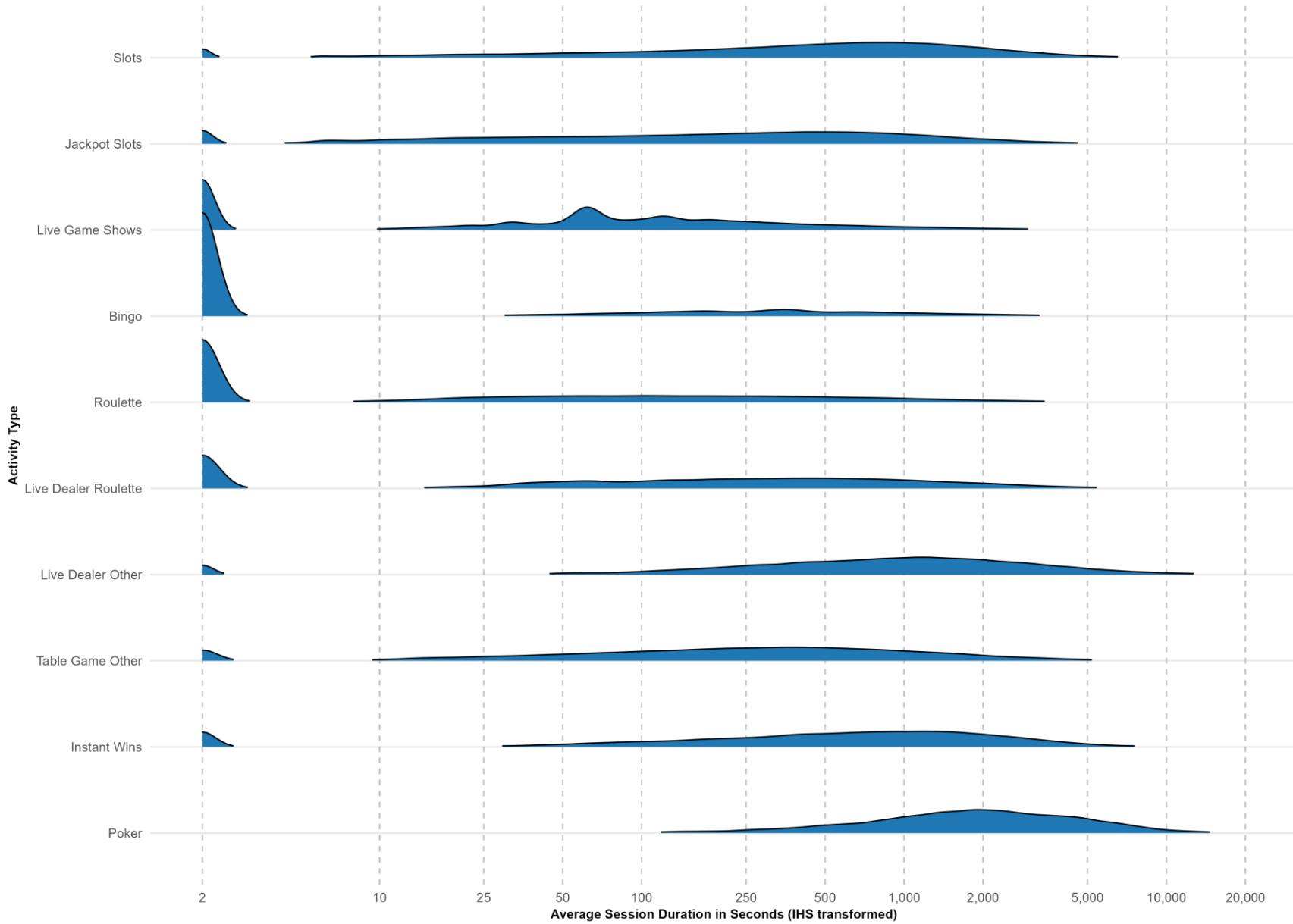
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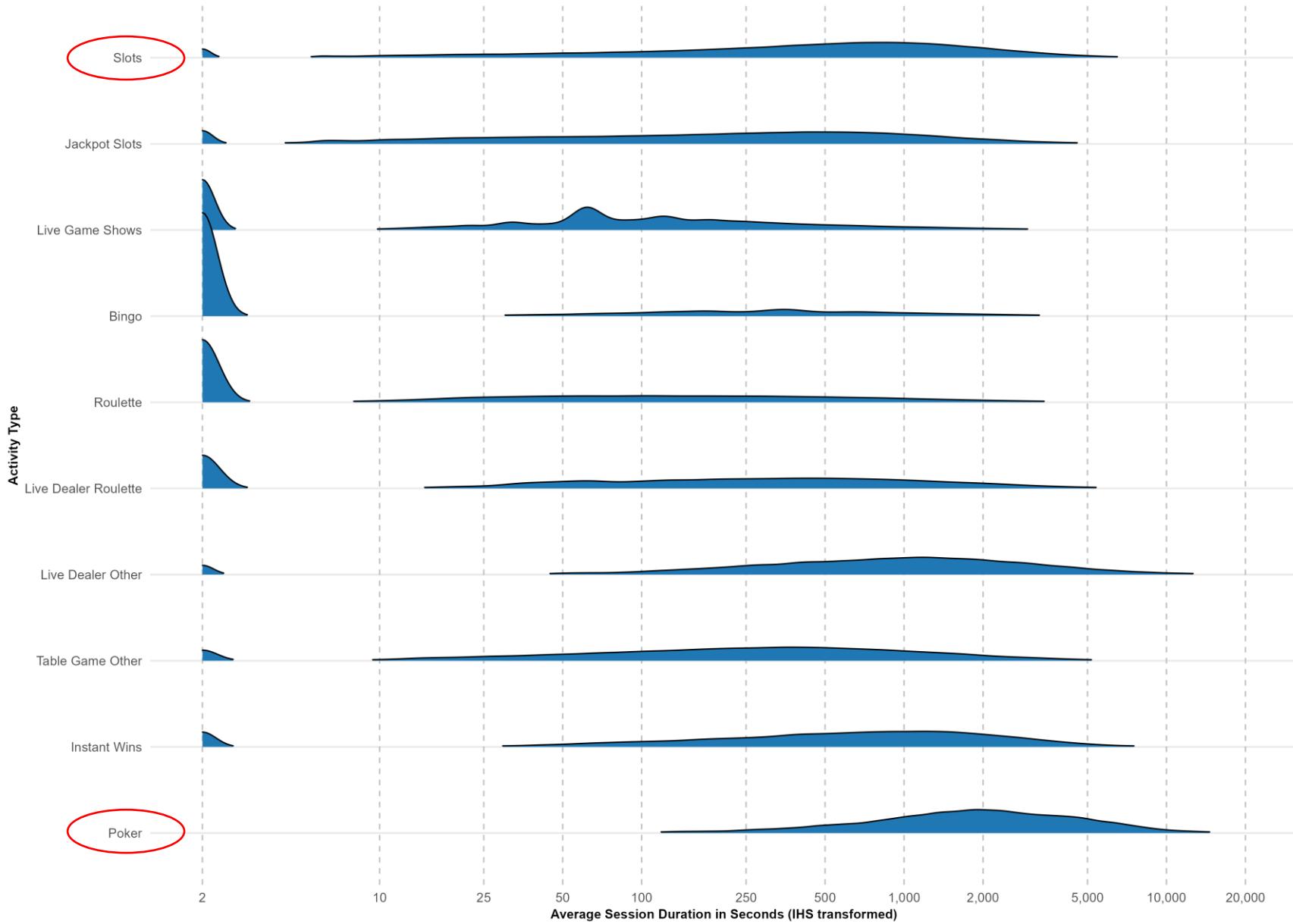
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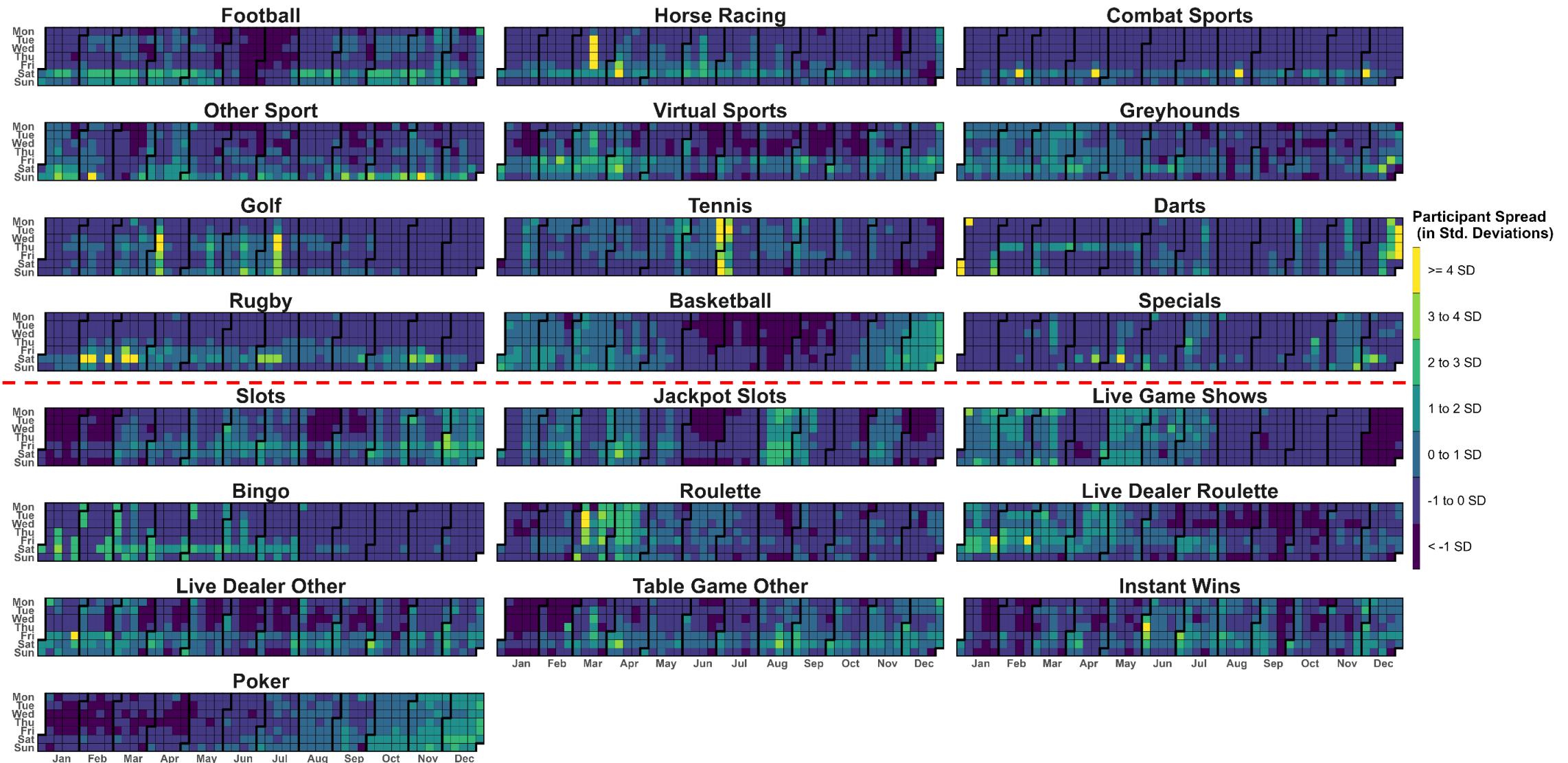
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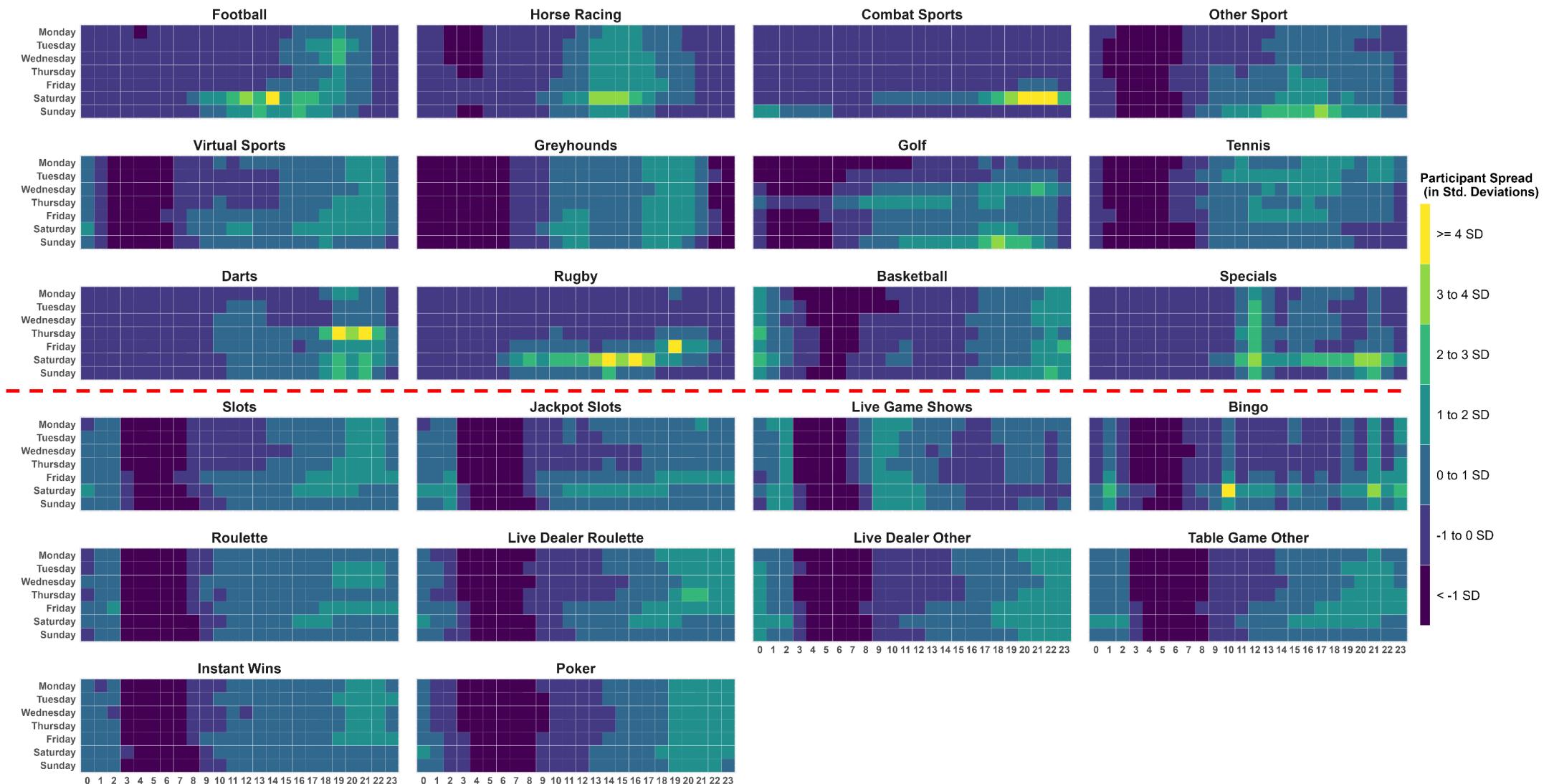
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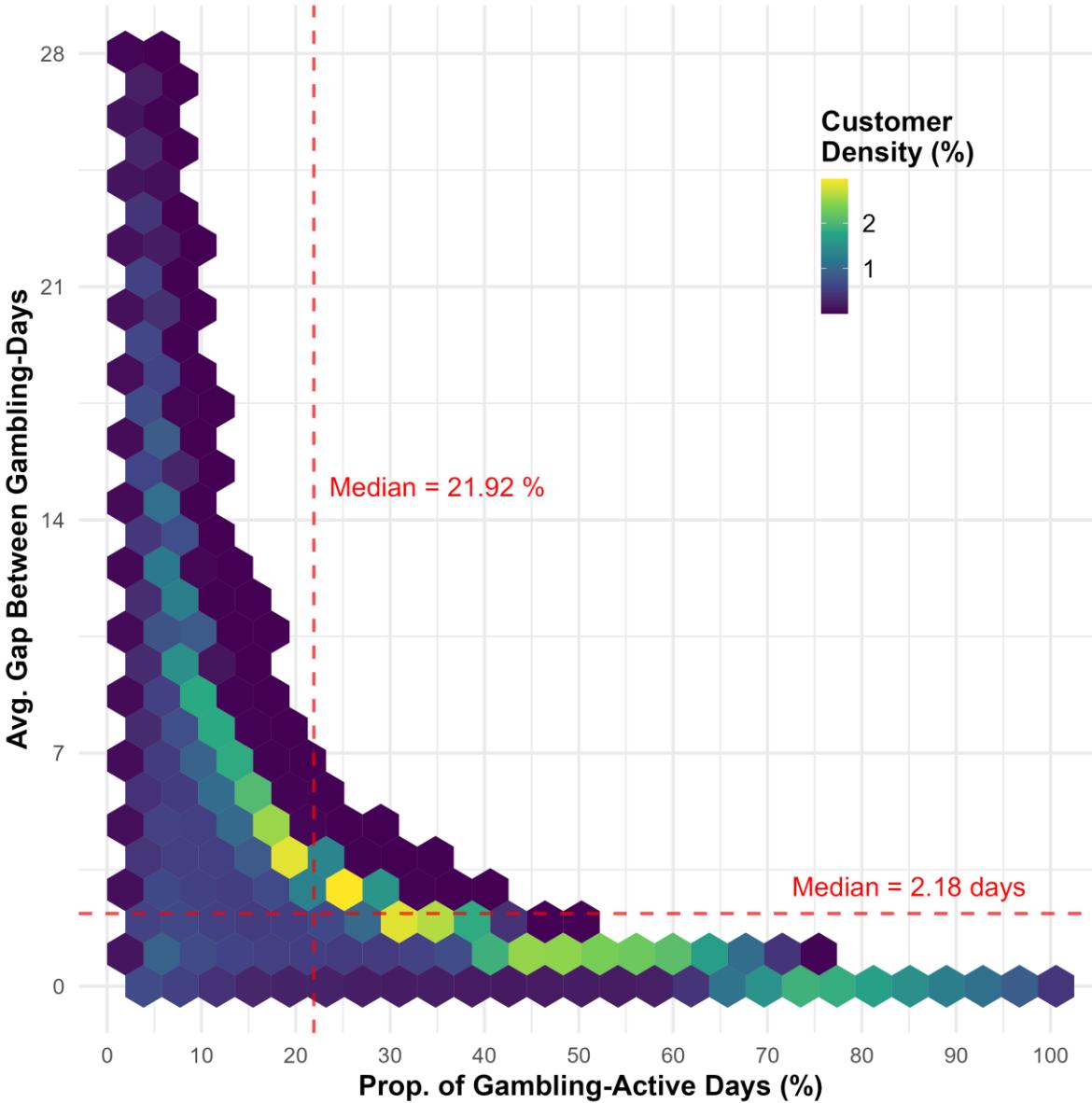


Patterns of Play by Activity Type

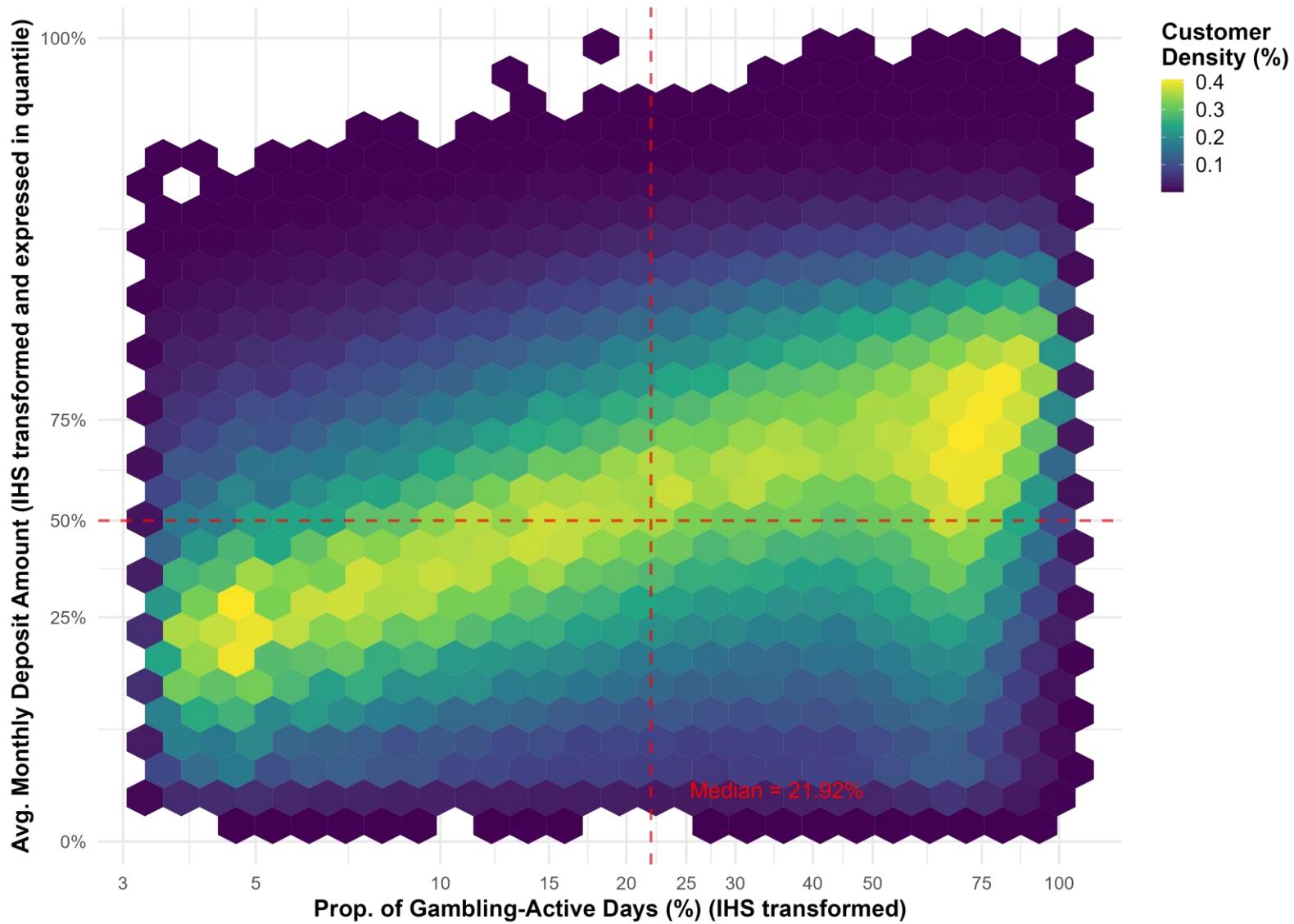


Typologies of Online Gamblers?

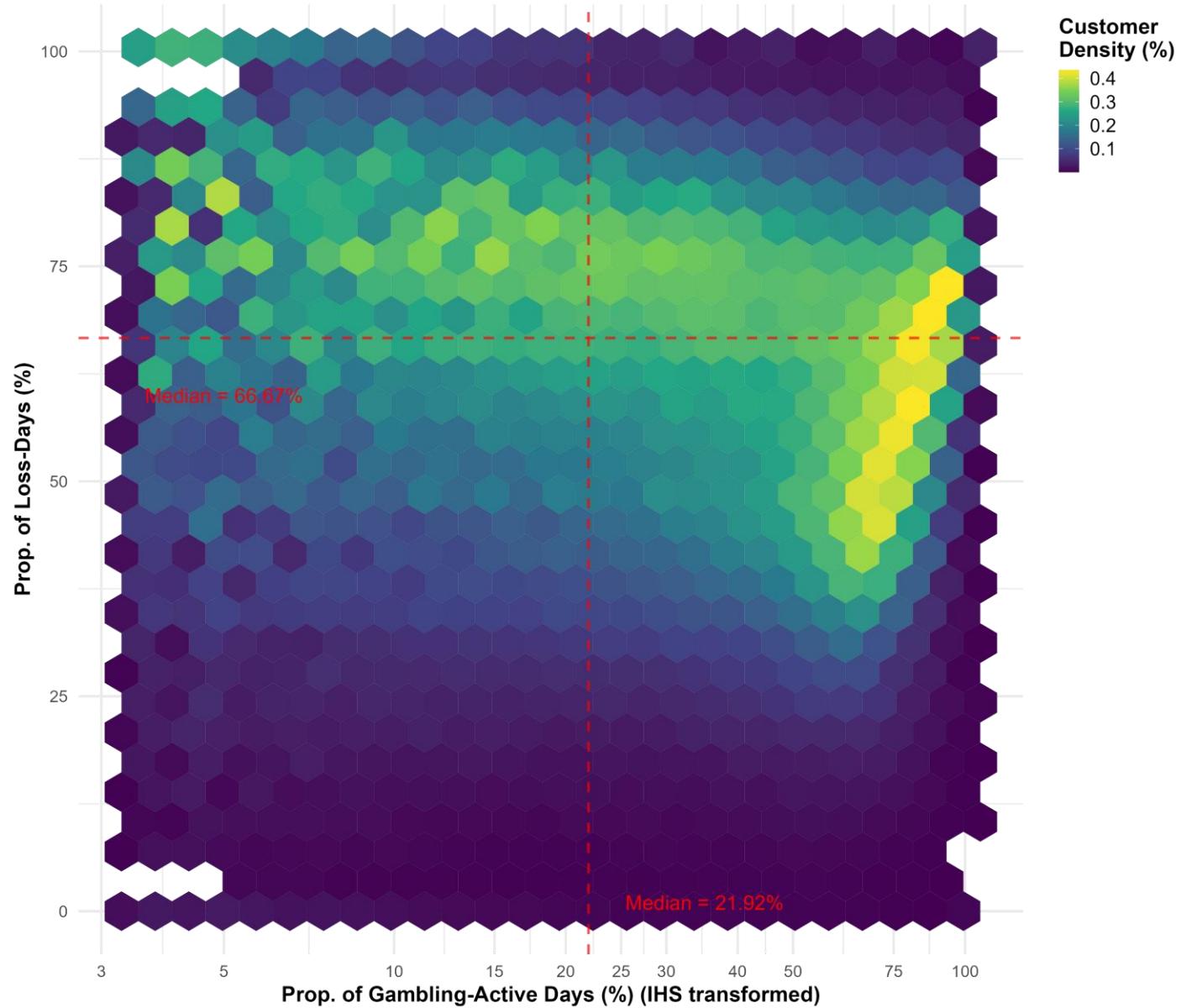
Gambling Frequency & Variability



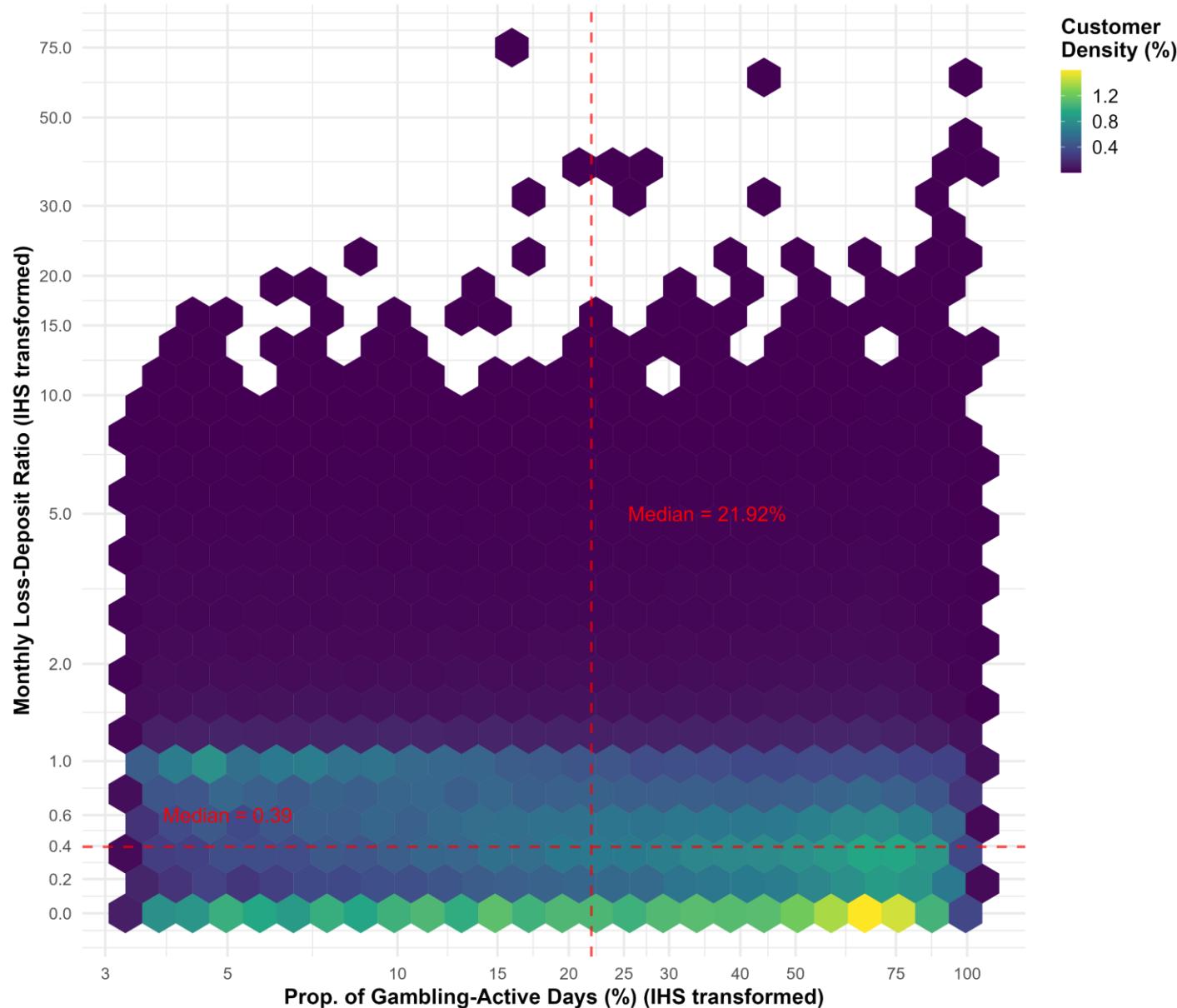
Gambling Frequency & Intensity I



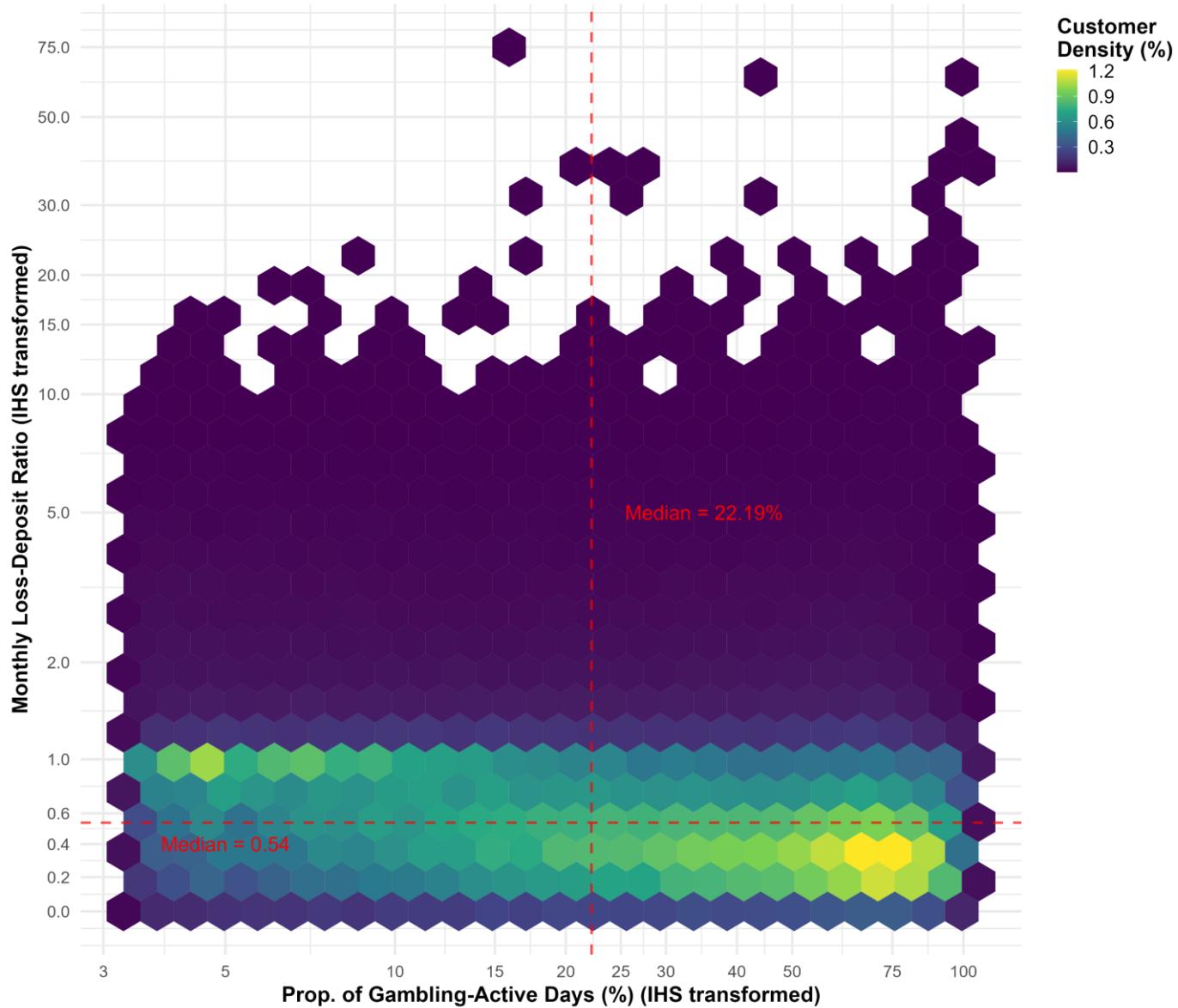
Gambling Frequency & Intensity II



Gambling Frequency & Riskiness



Gambling Frequency & Riskiness

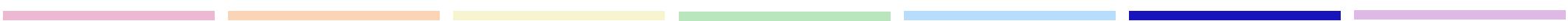


Further Analysis

Participant Geo-demographics: Methodology

‘Analyses of people by where they live’

(Harris et al. 2005)

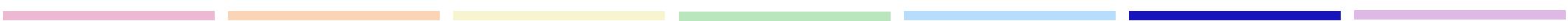


Participant Geo-demographics: Methodology

‘Analyses of people by where they live’

(Harris et al. 2005)

- › **Data:** 2021 Output Area Classification (England and Wales)
- › **Granularity:** Output Area
- › Distinctive characteristics at neighbourhood scales (Singleton & Longley 2015)
- › Created from combination of 60 census variables



Participant Geo-demographics: Methodology

$$IS_i = \frac{\left(\frac{n_i}{n_{gb}} \right)}{\left(\frac{Pop_i}{Pop_{gb}} \right)}$$

Where:

n_i = the number of customers in class i

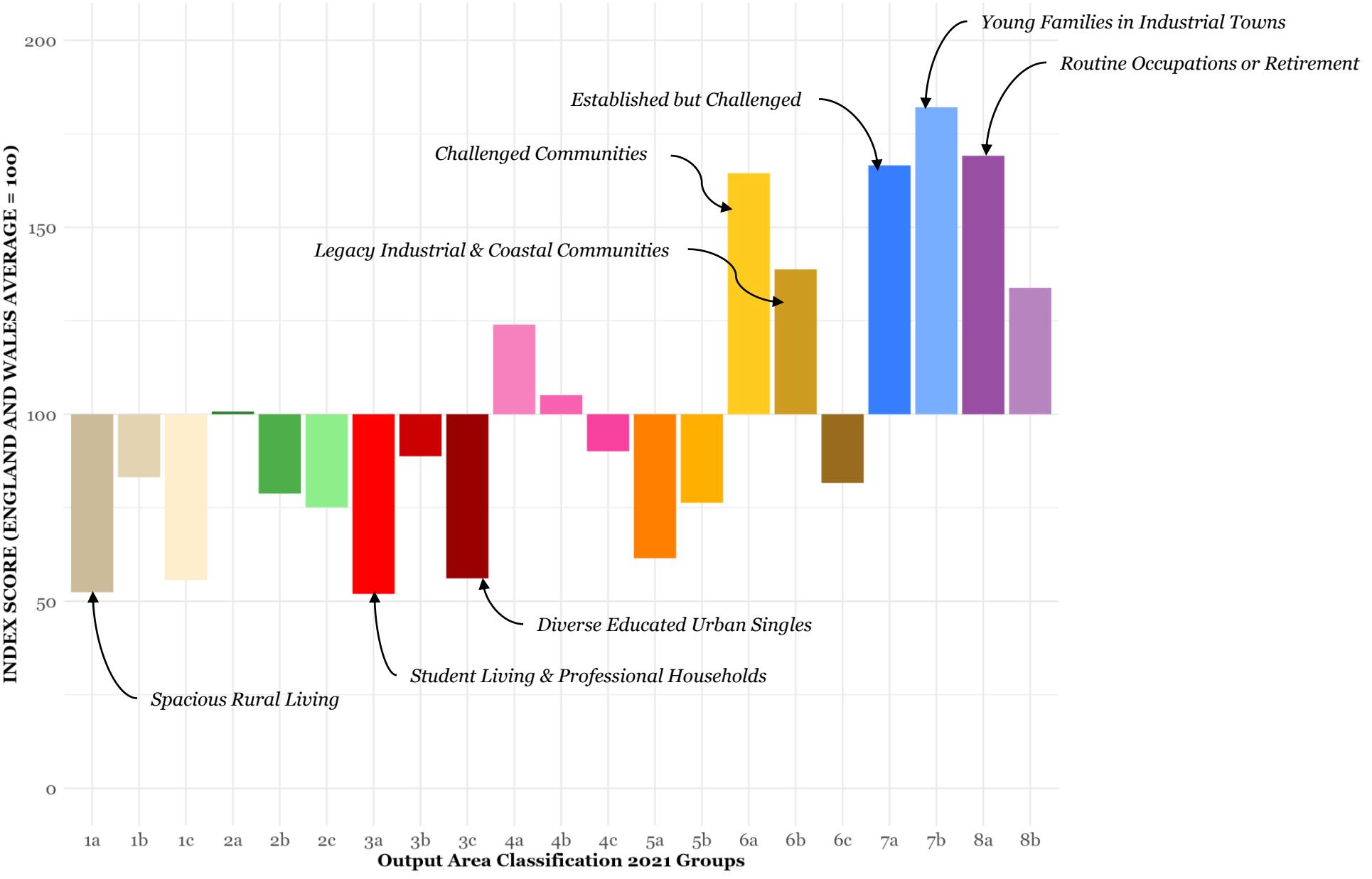
n_{gb} = the total number of customers in GB

Pop_i = the adult population in class i

Pop_{gb} = the adult population in GB



Participant Geo-demographics by 2021 OAC Groups



Concluding Remarks

Summary

- › Activity type matters!
- › Gambling behaviour is multi-dimensional



Summary

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Attracts distinct demographics & influences patterns of play

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Summary

- › Activity type matters!

Attracts distinct demographics & influences patterns of play

- › Gambling behaviour is multi-dimensional

Need to account for the complexity to understand gambling behaviour



Novelty & Implications

- › Looks at customers not accounts
- › Data available for the full year and in the most granular format (transaction-level)
- › Customer address information

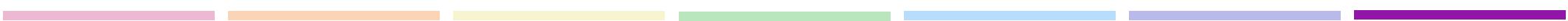


Novelty & Implications

- › Looks at customers not accounts

Allows precise assessment of individual gambling behaviour

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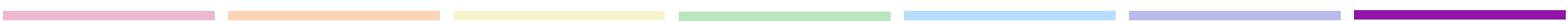
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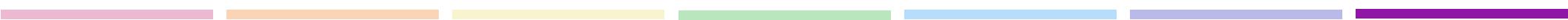
- › Customer address information

Allows geographical analysis which can be used to target messaging and efficiently allocate resources



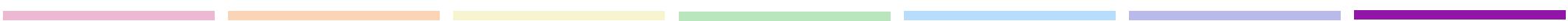
Next Steps

- › Identify typologies of online gamblers in GB
- › GB-wide risk mapping based on our definition of “at-risk” gamblers
- › Compare with 1) survey-identified (GambleAware and PDV surveys) & 2) self-reported (self-excluded customers) “at-risk” gamblers



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K-means clustering
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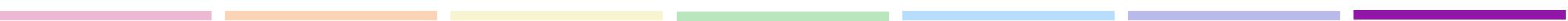
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Profile analysis



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Gamble
Aware

Questions?