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## Payments Transaction Data from Online Casino Players and Online Sports Bettors

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## Data Article

# Payments transaction data from online casino players and online sports bettors



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## ABSTRACT

Raw datasets were sourced from a U.S. based provider of digital gambling payments systems, who has demanded to remain anonymous. The raw datasets cover a time period of 6-years (2015–2021), representing over 300,000 customers and approximately 90 million transaction records. One of these raw datasets is a **transaction log file** representing customer payment transaction data across a variety of gambling merchants (e.g., online casinos, sportsbooks, and lottery providers). With this article we describe the transaction log file and provide two filtered subsets of the data. The subsets contain 1-year of customer payments transaction records for two gambling merchants: (1) a casino-focused brand and (2) a sports-focused brand. These data will be particularly helpful to researchers in the fields of gambling studies and behavioral sciences, and more generally for data and computer scientists. With digital payments becoming increasingly prevalent across the gambling industry, these data can be used to explore how individuals' payment behavior can inform us about their gambling behavior. The granularity and

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timespan of the data provide an opportunity to apply a variety of data science and machine learning techniques.

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## Specifications table

Subject	Business, Management and decision sciences
Specific subject area	Gambling Studies
Type of data	Two CSV files (table format).
How the data were acquired	Raw data were obtained from a gambling payments provider based in the U.S. The data were stored on a compute cluster using Hadoop Distributed File System and Apache Spark. Subsets of the data were retrieved using this architecture and converted to CSV format.
Data format	Secondary Data Raw Filtered
Description of data collection	This is a secondary source of data. Raw transactional data from all customer accounts are collected and stored by the payment provider in a transaction log file. Data for each transaction are recorded and associated with a unique identifier for each customer. The datasets provided herein are 1-year subsets of the transaction log file; March 1st, 2019 through to February 29th, 2020.
Data source location	Secondary data was sourced from a gambling payments provider located in the U.S. and stored at: University of Nevada, Las Vegas Las Vegas, Nevada USA
Data accessibility	Repository name: Mendeley Data Data identification number: n/a Direct URL to data: doi: <a href="https://doi.org/10.17632/9j5gcygnwg.1">10.17632/9j5gcygnwg.1</a>
Related research article	Ghaharian, K., Abarbanel, B., Kraus, S. W., Singh, A., & Bernhard, B. (2023). Players Gonna Pay: Characterizing gamblers and gambling-related harm with payments transaction data. <i>Computers in Human Behavior</i> , 107717. <a href="https://doi.org/10.1016/j.chb.2023.107717">https://doi.org/10.1016/j.chb.2023.107717</a>

## Value of the Data

- This data provides detailed insights into customer payment behavior from two online gambling merchants. This is the first time data from such a source has been published for the research community.
- There is uncertainty surrounding how digital payments may impact gambling harms. Moreover, the potential utility of payments transaction data to support consumer protection efforts is largely unexplored.
- These gamblers' payment transactions are a novel source of data that will be useful for investigators interested in studying the multiple channels that contribute to gambling behavior.
- This data will be of particular interest to researchers and policymakers who want to understand the potential opportunities payments transaction data provides in terms of harm reduction, currently a widely discussed subject among global gambling regulators.
- The data represent customer transactions from two different gambling product verticals, thus permits the investigation of payment behavior related to specific gambling activities and also comparative analyses across gambling formats.
- The granularity and timespan of the data – timestamped transaction information per customer for 1-year – permit the computation of variables at the customer-level and could support both aggregate and time-series analyses. This may be useful to a broad range of

researchers and data scientists interested in applying advanced statistical methods and machine learning techniques.

## 1. Objective

This dataset is made available as part of an academic and industry collaboration to explore and analyze payments modernization in the gambling industry; see the *Payments Research Collaborative* at <https://osf.io/ycqrg/>. The objective of this research initiative is to study the convergence of responsible gambling and payments modernization (i.e., advances in digital payments and other cashless payment methods). Currently, there is a lack of an understanding of payments modernization's effects on gambling behavior and its implications for consumer protection policy and practice [4]. On one hand, theoretical literature suggests that digital payment methods decrease the salience of cash and could make it harder for gamblers to stay in control of their spending. On the other hand, digital payments could support consumer protection efforts by enabling the tracking and analysis of gamblers' payment behavior.

This manuscript is submitted with [original research article](#) and provides important context surrounding the data used for analysis. Firstly, there are numerous digital payment modalities available to gambling consumers, with this article we explain the mechanics of – and how customers interact with – the digital payment system from which the data were collected. Secondly, we detail data storage and extraction processes and provide rationale for sampling subsets of the data.

## 2. Data Description

A U.S. based provider of gambling payments services (herein after referred to as “GPP”) made raw datasets available to our research team. GPP has demanded to remain anonymous. The datasets span 6-years (2015-2021) and comprise over 300,000 customers and approximately 90 million transaction records. GPP enables gambling merchants (i.e., gambling operators) to provide their customers with a dedicated gambling payment account (i.e., a *digital wallet*). The digital wallet is tied to an FDIC-insured bank account and is analogous to a prepaid money card. Customers make gambling merchant transactions (i.e., deposits and withdrawals) with their digital wallet via a corresponding gambling merchant's app or website, where it is provided as an option for payment alongside other methods. GPP is currently offered by a variety of gambling merchants across the U.S., including casinos, state lotteries, and race and sports books. For customers, the digital wallet provides security and allows deposits to and withdrawals from a gambling merchant account with common digital payment modalities including, for example, debit and credit cards, ACH payment, and third-party payment providers such as PayPal. The technology also removes the need for customers to visit a location in-person to fund their gambling merchant account. These and other features of the digital wallet have the potential to impact individuals' gambling behavior by, for example, encouraging impulsivity by making it easier to reload funds and continue gambling with less interruption [4].

One of the raw datasets provided was a **transaction log file** representing customer payment transaction data across a variety of gambling merchants. This log file is a collection of data from four types of digital wallet transactions, which occur at two levels (see Fig. 1). These levels are characterized by the flow of money. Level 1 is debits (inflow of money) and credits (outflow of money) associated with a customers' funding account(s), for example, a personal bank account or credit card. Customers can move money bi-directionally at Level 1 between their personal funding account(s) and their digital wallet. These two directions include movement between their funding account and digital wallet in the form of deposits (L1D) and withdrawals (L1W). Level 2 is credits and debits associated with customers' gambling merchant account(s) (or wagering account), for example, an online sports betting account. Here, the bi-directional money

The Levels of Customer Transactions

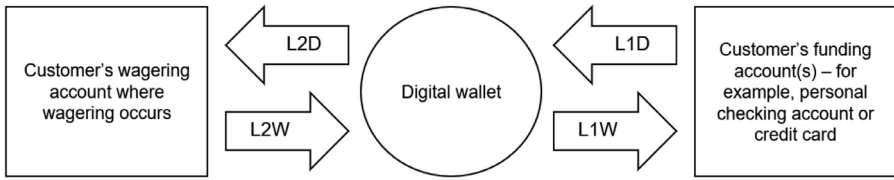


Fig. 1. The levels of customer transactions.

Note. This figure illustrates the levels at which a GPP account holder can transfer money. At Level 1, deposits (L1D) and withdrawals (L1W) occur between the digital wallet and funding account(s). At Level 2, deposits (L2D) and withdrawals (L2W) occur between the digital wallet and the dedicated gambling merchant account.

movement occurs between the digital wallet and the wagering account. Again, these two directions include deposits (L2D) and withdrawals (L2W).

It is feasible for a customer to have multiple funding accounts, digital wallets, and/or gambling merchant accounts. It should be noted though, a customer can only move money between a digital wallet and its associated gambling merchant account. A digital wallet set up with, for example, "Merchant A" cannot be used to deposit money to a wagering account at "Merchant B".

The below data description provides details on filtered 1-year subsets derived from the raw transaction log file. We have a data sharing policy in place with the donor that prevents us from making the raw transaction log file publicly available in its entirety (i.e., to support data privacy and maintenance of individuals' anonymity). As research is conducted, the policy does permit publication of de-identified subsets of the data as an accompaniment to research articles and reports. While we cannot make the entire raw data public, we do welcome inquiries regarding access to additional subsets of the raw data. For these requests, please contact the corresponding author.

The following files are publicly available at doi:[10.17632/9j5gcygnwg.1](https://doi.org/10.17632/9j5gcygnwg.1):

- i. **Online\_casino\_DIB.csv**: a CSV file where each observation represents a unique transaction. This is a subset of the transactions log file comprising 138,928 observations and five columns. The data represent payment transactions from customers of a casino-focused online gambling merchant based on the East Coast of the U.S. during the 1-year period starting March 1<sup>st</sup>, 2019 and ending February 29<sup>th</sup>, 2020.
- ii. **Online\_sports\_DIB.csv**: a CSV file where each observation represents a unique transaction. This is a subset of the transactions log file comprising 447,853 observations and five columns. The data represent payment transactions from customers of a sports-focused online gambling merchant based on the West Coast of the U.S. during the 1-year period starting March 1<sup>st</sup>, 2019 and ending February 29<sup>th</sup>, 2020.

The five columns in the above two files – Online\_casino\_DIB.csv and Online\_sports\_DIB.csv – are:

- A. **ReqTimeUTC**: Transaction timestamp in UTC (Coordinated Universal Time). A date-time variable indicating the time a transaction occurred.
- B. **TransactionType**: A character variable indicating the type of transaction. Transactions labeled as "LOYALTYCARDDEBIT" are Level 2 deposits. Transactions labeled as "LOYALTYCARDCREDIT" are Level 2 withdrawals. Transactions labeled as "LOYALTYCARDCREDITCL" or "LOYALTYCARDCREDITACH" are Level 1 deposits made via a card or ACH respectively.
- C. **TransactionAmount**: The amount the transaction was for in USD.
- D. **Status**: A character variable indicating whether the transaction was approved or declined.
- E. **AccountIdentifier**: A character variable indicating the customer who made the transaction.

### 3. Experimental Design, Materials and Methods

The data in the transaction log file were collected and stored by GPP. The original file – delivered in CSV format – has been stored at the Department of Computer Science at the University of Nevada, Las Vegas. A database system designed to hold this data and optimize it for analysis has been implemented on a compute cluster using Hadoop Distributed File System and Apache Spark. The original CSV file has been converted to a columnar storage format compatible with Hadoop based clusters; Pyspark was used for conversion to Apache Parquet format.

Two 1-year subsets of the transaction log file were extracted and converted into CSV format. Each subset represents a different gambling merchant. *Online\_casino\_DIB.csv* comprises customer payment transaction data from a casino-focused online gambling merchant based on the East Coast of the U.S., where a variety of games are offered including slots and table games. *Online\_sports\_DIB.csv* contains customer payment transactions from a sports-focused online gambling merchant based on the West Coast of the U.S. that provides online sports betting and other related products (e.g., daily fantasy sports). We made this distinction between subsets to facilitate the study of gamblers with dissimilar game preferences and across jurisdictions. A gamblers' payment behavior is autonomous from their gambling behavior. Therefore, this sampling strategy can support research to evaluate the generalizability and reproducibility of results from analyses that are performed using payment transaction data.

The 1-year timeframe – as opposed to a shorter time frame – provides an opportunity to explore and study a broad range of gamblers and their payment behaviors rather than a pre-defined subset. For example, previous studies have been interested in exploring early gambling behaviors only [2,3]. It also provides a period of time where both merchants were operational and providing services to their customers. Additionally, the 1-year timeframe accounts for any seasonal effects, of which there was a high likelihood given the annual scheduling of sporting events. It also provides the most recent 1-year period – of the data that is available – that is not impacted by business closures related to the COVID-19 pandemic. The impact of the COVID-19 pandemic on gambling behavior is an ongoing area of research with preliminary evidence reporting mixed findings [6]. COVID-19 materialized rapidly during the first months of 2020, but it was not until March 11th, 2020 that the World Health Organization (WHO) declared the disease pandemic status [1]. Two days after the WHO announcement, President Donald Trump declared a National Emergency for the U.S. and by the end of the month all land-based commercial casinos had closed operations [1,7]. Online race and sports gambling operators were also impacted with much of the world's major events being cancelled [5].

#### Ethics Statements

We produce and share this data with permission of GPP. The data were provided in accordance with the Payment Card Industry Data Security Standard (PCI DSS), therefore no identifiable information was provided. To increase anonymity, we have obfuscated the column *AccountIdentifier*. This work did not involve any human or animal subjects, nor data from social media platforms.

#### Declaration of Competing Interest

During the past 5 years, the International Gaming Institute has received research funding from MGM Resorts International, Wynn Resorts Ltd, Las Vegas Sands Corporation, Caesars Entertainment Corporation, State of Nevada, Knowledge Fund, State of Nevada Department of Health and Human Services, Aristocrat, Entain, and San Manuel Band of Mission Indians. IGI runs the triennial research-focused International Conference on Gambling and Risk Taking, whose sponsors include industry, academic, and legal/regulatory stakeholders in gambling. A full list of

sponsors for the most recent conference can be found at <https://www.unlv.edu/igi/conference/17th/sponsors>.

During the past 5 years, Kasra Ghaharian has received funding from the Nevada Department of Health and Human Services for research on problem gambling.

Piyush Puranik has no outside funding or competing interests to report.

During the past 5 years, Brett Abarbanel has received funding from the Manitoba Gambling Research Program, GP Consulting, Connecticut Council on Problem Gambling, Bermuda Casino Gambling Commission, the States of Nevada and California, Aristocrat Gaming, Life Works, GLG Consulting, MGM Resorts International, ProPress Germany, Scientific Affairs, and Caesars Entertainment. Dr. Abarbanel has received reimbursement for travel from Association Cluster Sport International, Kansspelautoriteit, Gamification Group (Finland), British Columbia Lottery Corporation, GambleAware, Las Vegas Convention and Visitors Authority, Scientific Affairs, University of Salford, and National Collegiate Athletic Association (USA). During the time period, Dr. Abarbanel was a member of the Singapore National Council on Problem Gambling International Advisory Panel, for which she was reimbursed for her time.

Kazem Taghva has no outside funding or competing interests to report.

During the past 5 years, Shane W. Kraus has received research funding from the U.S. Department of Veterans Affairs, International Center for Responsible Gaming, European Science Foundation, National Science Center Poland, MGM Resorts International, Center for the Application of Substance Abuse Technologies (University of Nevada, Reno), Taylor Francis, Springer Nature, and Kindbridge Research Institute. Dr. Kraus also serves on the Nevada Advisory Council of Problem Gambling in Nevada.

Ashok Singh has no outside funding or competing interests to report.

Alan Feldman is a former executive from MGM Resorts International, leaving the company in 2019. He remains at present an advisor to MGM solely on responsible gaming matters in Japan. Additionally, during the past 3 years he has received funding from the San Manuel Band of Mission Indians and Entain Foundation. He serves as the chairman of the International Center for Responsible Gaming of which members of the Payments Research Collaborative are donors.

During the past 5 years, Dr Bo Bernhard has been funded by the US–Japan Business Council, Wynn Resorts, Atomic 47/ePlata Banking, Las Vegas Sands, the Nevada Department of Health and Human Services Governor’s Advisory Panel on Problem Gambling, the State of Nevada Knowledge Fund and MGM Resorts International. He has received travel and/or honoraria for presenting his research in more than two dozen countries.

## Data Availability

[Raw payments transaction data from online casino players and online sports bettors \(Original data\)](#) (Mendeley Data).

## CRediT Author Statement

**Kasra Ghaharian:** Conceptualization, Methodology, Software, Validation, Formal analysis, Investigation, Data curation, Writing – original draft, Writing – review & editing, Visualization, Supervision, Project administration; **Piyush Puranik:** Software, Data curation, Writing – original draft, Writing – review & editing; **Brett Abarbanel:** Conceptualization, Resources, Writing – review & editing, Supervision, Project administration, Funding acquisition; **Kazem Taghva:** Resources, Writing – review & editing, Supervision, Project administration; **Shane W. Kraus:** Conceptualization, Writing – review & editing, Supervision, Project administration; **Ashok Singh:** Writing – review & editing, Supervision, Project administration; **Alan Feldman:** Conceptualization, Writing – review & editing, Supervision, Project administration, Funding acquisition; **Bo Bernhard:** Writing – review & editing, Supervision, Project administration, Funding acquisition.



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