



**Rule Petition to Amend**

- WAC 230-03-200 Defining “gambling equipment.”
- WAC 230-15-150 Selling and redeeming chips.
- WAC 230-15-280 Surveillance requirements for house-banked card games.
- WAC 230-15-500 Accounting for table inventory.
- WAC 230-15-505 Selling gambling chips to players.
- WAC 230-15-553 Defining “cash equivalent.”
- WAC 230-15-585 Using drop boxes.
- WAC 230-15-615 Conducting the count.
- WAC 230-15-620 Concluding the count.

**Rule Petition for New Rules**

- WAC 230-15-755 “Ticketing (TITO) system” defined.
- WAC 230-15-758 “Ticket” defined.
- WAC 230-15-761 “Invalid Ticket” defined.
- WAC 230-15-764 “TITO-enabled bill validator” defined.
- WAC 230-15-767 “Ticket redemption kiosk” defined.
- WAC 230-15-770 Ticket requirements.
- WAC 230-15-773 Requirements for ticket validation system.
- WAC 230-15-776 Requirements for TITO-enabled bill validators.
- WAC 230-15-779 Requirements for drop boxes/cassettes in TITO-enabled bill validators.
- WAC 230-15-782 Requirements for ticket redemption kiosks.

**July 2023 – Discussion and Possible Filing**  
**January 2022 – Commission Review**  
**November 2021 – Rule-Making Petition Received**

<b>Tab 7: JULY 2023 Commission Meeting Agenda.</b>	<b>Statutory Authority 9.46.070</b>
<b>Who Proposed the Rule Change?</b>	
Tim Merrill, Maverick Gaming from Kirkland, Washington	
<b>Background</b>	
<p><b>BOLD = Changes made after January 2022 Commission Meeting.</b></p> <p>Tim Merrill of Maverick Gaming in Kirkland, Washington is proposing to amend a number of rules to allow for the use of ticket-in/ticket-out using the iDROP kiosk device in card room to purchase and redeem tickets for table games play. According to the petitioner, iDROP enables players to purchase chips directly at the live gaming table from the dealer and brings ticket-in/ticket-out to live gaming tables, thus allowing players move directly from live game to live game without having to go to the cage cashier. Players are able to cash out at any time on the live gaming table and receive their money in ticket form, paid out by the iDROP kiosk. The iDROP bill acceptor system allows for easy accounting and verification of all cash in and out at each live gaming table, transaction history can be viewed in real time in the event that a customer dispute arises, and decreases the threat of counterfeit bills because every bill is verified using the iDROP bill acceptor. The petitioner also feels that manipulation in the count room would become impossible.</p> <p>The petitioner feels this change is needed because this change would allow card rooms the ability to validate and count the drop on live table games using real time data for efficient reporting of revenue. The petitioner feels there will be an increase in security because the funds will always be in secure boxes. The use of tickets will allow for a quick and secure count by having tickets to validate from data already collected at the table games. Lastly, the petitioner feels this will help combat the passing of counterfeit</p>	

bills by using a ticket-in/ticket-out device on the table games to validate all bills for authenticity.

The petitioner feels the effect of this rule change would allow the use of tickets and kiosk system instead of only allowing the purchase of chips using cash and the redemption of chips at the cage.

If the petition is accepted, our card room and manufacturer rules will need to be amended and additional new rules will need to be adopted.

**At the January 2022 Commission meeting, Commissioners agreed to initiate rule making in response to the petition. Staff raised some policy concerns, but they had also not received and evaluated the equipment being discussed. Once staff did receive the equipment, they spent a number of months studying the Ticket In Ticket Out (TITO) device to understand how it worked and developed a set of rules that addressed the policy concerns raised by staff in January 2022. Staff did not test whether application of the proposed rules would be compatible with the machine provided by the petitioner. Instead, the comprehensive set of proposed new and amended rules define these types of devices and their components and set out requirements and procedures for the use of these types of devices.**

**In September 2022, the Commission consulted with stakeholders and tribal partners on this petition, as well as two other petitions. Of the 14 licensees at the meeting, there was support for the petition because it would help create efficiencies, streamline accounting processes, and reduce workload. Licensees also felt that it would aid in anti-money laundering compliance and detection of counterfeit currency. Tribal partners expressed concerns that use of the device could be considered an expansion of gambling, was outside the legislative intent, and could be a challenge for problem gamblers.**

Attachments:

- Petition
- **Proposed amended and new rules**
- **Maverick Powerpoint presentation from January 2022 Commission Meeting**
- **Transcript from January 2022 Commission discussion on this rule petition**

#### **Policy Considerations**

Staff have the following policy concerns:

- While this equipment could reduce criminal behavior, such as the passing of counterfeit bills and theft, we are unsure how the use of iDROP will impact anti-money laundering efforts;
- Ability to maintain a closed system;
- Other impacts or changes use of this equipment would bring to the card room operation, such as count room procedures, accounting, elimination of the cage, etc.
- The security and integrity of the equipment; and
- Connectivity to the card room's accounting systems.

**Having received and evaluated the TITO device, staff believe that the amended and new rules adequately address the concerns they raised in January 2022.**

#### **Problem Gambling Implications**

**Staff reached out to the Evergreen Council on Problem Gambling for feedback. Assistant Director Tana Russell confirmed that there was some research that supports the idea that the farther a person**

is removed from the value of their standard currency, the easier it is to overspend, particularly when gambling.

Some articles on the impact of cashless systems on problem gambling include:

- [Cashless Gaming Could Increase Problem Gambling, Advocates Say | GamblingCompliance | VIXIO](#)
- [What is the impact of cashless gaming on gambling behaviour and harm? \(responsiblegambling.vic.gov.au\)](#)
- [Cashless gambling and the pain of paying: effects of monetary format on slot machine gambling \(tandfonline.com\)](#)

#### **Staff Recommendation**

**Staff recommends that Commissioners file the amended and new rules for further discussion.**

## Laydon, Ashlie (GMB)

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**From:** no-reply@wsgc.wa.gov on behalf of WSGC Web <no.reply@wsgc.wa.gov>  
**Sent:** Thursday, November 11, 2021 11:42 AM  
**To:** Rules Coordinator (GMB)  
**Subject:** Request a Rule Change Submission from wsgc.wa.gov

External Email

Submitted on Thursday, November 11, 2021 - 11:41am Submitted by anonymous user: 50.237.113.162 Submitted values are:

Petitioner's Name: Tim Merrill  
Mailing Address: 12530 NE 144th ST  
City: Kirkland  
State: WA  
Zip Code: 98034  
Phone: 4252641050

Email: TM@maverickgaming.com

Rule Petition Type: Amend Rule – I am requesting WSGC to change an existing rule.

==Amend Rule – I am requesting WSGC to change an existing rule.==

List rule number (WAC) if known: WAC 230-15-553 Defining "cash equivalent., WAC 230-15-100 Providing cards and chips in card games., WAC 230-15-145 Making wagers

I am requesting the following change:

Allow the use of ticket in ticket out using the iDROP kiosk device, in card rooms, to purchase and redeem tickets for table games play.

iDROP enables players to purchase chips directly at the live gaming table from the dealer. It also brings ticket-in, ticket-out to live gaming tables. Thus, players can move directly from live game to live game without having to go to the cage cashier. Players can cash out anytime on the live gaming table and receive their money in ticket form – paid out by the iDROP.

Players can cash out their tickets at a kiosk at any time.

The iDROP is simple to use and it provides direct, real-time information on the drop to the casino. The iDROPS are particularly of benefit on tables where players buy in larger amounts.

The iDROP bill acceptor system allows for easy accounting and verification of all cash in and cash out at each live gaming table.

The transaction history can be viewed in real time in the event of any customer disputes.

30 bills or tickets can be inserted into the iDROP bill acceptor.

Manipulation in the count room becomes impossible.

The threat of counterfeit bills is minimal because every bill is verified using the iDROP bill acceptor.

This change is needed because: First, this change would allow the cardrooms the ability to validate and count the drop on live tables games using real time data for efficient reporting of revenue. There will be an increase in security because the funds will be always secure in boxes. The use of tickets will allow for a quick and secure count by having tickets to validate from data already collected at the table games. Lastly, this will help to combat the passing of counterfeit bills by using a TITO device on the table games to validate all bills for authenticity, count the bills and print a ticket.

The effect of this rule change will be: Allowing the use of tickets and kiosk system instead of only allowing the purchase of chips using cash and the redemption of chips at the cage.

The results of this submission may be viewed at:

<https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.wsgc.wa.gov%2Fnode%2F18%2Fsubmission%2F2930&data=04%7C01%7Crules.coordinator%40wsgc.wa.gov%7Cdbacafa5e9fa4c02ebdc08d9a54b4c85%7C11d0e217264e400a8ba057dcc127d72d%7C0%7C0%7C637722565115927667%7CUnknown%7CTWFpbGZsb3d8eyJWljiMC4wLjAwMDAiLCJQIjoiV2luMzliLCJBTiI6IjEhaWwiLCJXVCi6Mn0%3D%7C1000&sdata=jl%2B1QTihyCFNh9q5RmVx%2BSSZTzyXelosZ8JDB7wISPo%3D&reserved=0>

**WAC 230-03-200 Defining "gambling equipment."** "Gambling equipment" means any device, gambling-related software, expendable supply, or any other paraphernalia used as a part of gambling or to make gambling possible. "Gambling equipment" includes, but is not limited to:

(1) Amusement games;  
(2) Punch boards and pull-tabs;  
(3) Devices for dispensing pull-tabs;  
(4) Electronic devices for conducting, facilitating, or accounting for the results of gambling activities including, but not limited to:

(a) Components of a tribal lottery system;  
(b) Electronic devices for reading and displaying outcomes of gambling activities; and

(c) Accounting systems that are a part of, or directly connected to, a gambling system including, but not limited to:

- (i) Bet totalizers; or
  - (ii) Progressive jackpot meters; or
  - (iii) Keno systems;
- (5) Bingo equipment;  
(6) Electronic raffle systems;

(7) Devices and supplies used to conduct card games, fund-raising events, recreational gaming activities, or Class III gaming activities, as defined in the Indian Gaming Regulatory Act at U.S.C. 25 chapter 29 § 2703 and in tribal-state compacts including, but not limited to:

- (a) Gambling chips;
  - (b) Cards;
  - (c) Dice;
  - (d) Card shuffling devices;
  - (e) Graphical game layouts for table games;
  - (f) Ace finders or no-peek devices;
  - (g) Roulette wheels;
  - (h) Keno equipment; and
  - (i) Tables manufactured exclusively for gambling purposes;
- (8) Debit card reading devices used at gambling tables to sell chips to players;

(9) Ticket in ticket out (TITO) systems to include, but are not limited to:

- (a) TITO-enabled bill validators;
- (b) Ticket redemption kiosks.

AMENDATORY SECTION (Amending WSR 23-11-108, filed 5/19/23, effective 6/19/23)

**WAC 230-15-150 Selling and redeeming chips.** Card game licensees must:

- (1) Sell chips and redeem chips at the same value; and
- (2) Sell chips for cash at gambling tables. Provided that house-banked card game licensees may allow players to use debit cards to purchase chips at house-banked card game tables in accordance with WAC 230-15-506 and 230-15-507. Provided further that house-banked card game licensees may allow players to purchase chips at gambling tables with valid tickets generated by TITO-enabled bill validators; and
- (3) Keep all funds from selling chips separate and apart from all other money received; and
- (4) Not extend credit to a person purchasing chips, including to card room employees playing cards.

AMENDATORY SECTION (Amending WSR 23-11-108, filed 5/19/23, effective 6/19/23)

**WAC 230-15-280 Surveillance requirements for house-banked card games.** House-banked card game licensees must use a closed circuit television system (CCTV) to closely monitor and record all gambling activities and areas, including, at least:

- (1) Each table, including:
  - (a) Cards; and
  - (b) Wagers; and
  - (c) Chip tray; and
  - (d) Drop box openings; and
  - (e) Table number; and
  - (f) Card shoe; and
  - (g) Shuffling devices; and
  - (h) Players; and
  - (i) Dealers; and
  - (j) Debit card reading devices at gambling tables; and
  - (k) TITO-enabled bill validators at tables and the cashier's cage; and
- (1) Ticket redemption kiosks; and
- (2) The designated gambling areas; and
- (3) The cashier's cage, including:
  - (a) Outside entrance; and
  - (b) Fill/credit dispenser; and
  - (c) Customer transactions; and
  - (d) Cash and chip drawers; and
  - (e) Vault/safe; and
  - (f) Storage cabinets; and
  - (g) Fill or credit transactions; and
  - (h) Floor; and
- (4) The count room, including:
  - (a) The audio; and
  - (b) Count table; and
  - (c) Floor; and
  - (d) Counting devices; and

- (e) Trolley; and
- (f) Drop boxes; and
- (g) Storage shelves/cabinets; and
- (h) Entrance and exit; and
- (5) The movement of cash, gambling chips, and drop boxes; and
- (6) Entrances and exits to the card room.

AMENDATORY SECTION (Amending WSR 23-11-108, filed 5/19/23, effective 6/19/23)

**WAC 230-15-500 Accounting for table inventory.** (1) House-banked card game licensees must establish procedures to ensure proper accounting for chips and coins stored at gambling tables, known as the "table inventory."

(2) Licensees must not add or remove chips or coins from the table inventory except:

- (a) In exchange for cash from players; or
- (b) In exchange for debit card transactions from players according to WAC 230-15-506; or
- (c) In exchange for tickets generated by TITO-enabled bill validators; or
- (d) To pay winning wagers and collect losing wagers made at the gambling table; or
- ~~((d))~~ (e) In exchange for chips received from a player having an equal total face value (known as "coloring up" or "coloring down"); or
- ~~((e))~~ (f) In compliance with fill and credit procedures.

AMENDATORY SECTION (Amending WSR 23-11-108, filed 5/19/23, effective 6/19/23)

**WAC 230-15-505 Selling gambling chips to players.** House-banked card game licensees must accurately account for all chips, debit card transaction receipts, tickets generated by TITO-enabled bill validators, and cash when they sell chips to players. Licensees must sell chips only at the gambling table.

AMENDATORY SECTION (Amending WSR 08-03-062, filed 1/14/08, effective 2/14/08)

**WAC 230-15-553 Defining "cash equivalent."** "Cash equivalent" means a:

- (1) Treasury check; or
- (2) Personal check; or
- (3) Traveler's check; or
- (4) Wire transfer of funds; or
- (5) Money order; or
- (6) Certified check; or



- (7) Cashier's check; or
- (8) Check drawn on the licensee's account payable to the patron or to the licensee; or
- (9) Voucher recording cash drawn against a credit card or debit card; or
- (10) Tickets generated by TITO-enabled bill validators.

AMENDATORY SECTION (Amending WSR 23-11-108, filed 5/19/23, effective 6/19/23)

**WAC 230-15-585 Using drop boxes.** (1) House-banked card game licensees must use a drop box to collect all cash, tickets redeemed by TITO-enabled bill validators, chips, coins, debit card transaction receipts, requests for fill, fill slips, requests for credit, credit slips, and table inventory forms.

(2) The dealer or the floor supervisor must deposit these items in the drop box.

AMENDATORY SECTION (Amending WSR 23-11-108, filed 5/19/23, effective 6/19/23)

**WAC 230-15-615 Conducting the count.** (1) All house-banked card room licensees must have a three person count team except as set forth in subsections (2) and (3) of this section. The three person count team must conduct the count as follows:

(a) The contents of drop boxes must not be combined before the count team separately counts and records the contents of each box; and

(b) As each drop box is placed on the count table, a count team member must announce the game, table number, and shift, if applicable, loudly enough to be heard by all persons present and to be recorded by the audio recording equipment; and

(c) A count team member must empty the contents onto the count table; and

(d) Immediately after the contents are emptied onto the count table, a count team member must display the inside of the drop box to the closed circuit television camera, and show it to at least one other count team member to confirm that all contents of the drop box have been removed. A count team member must then lock the drop box and place it in the drop box storage area; and

(e) Count team member(s) must separate the contents of each drop box into separate stacks on the count table by denominations of coin, chips, and cash and by type of form, record, or document; and

(f) At least two count team members must count, either manually or mechanically, each denomination of coin, chips, cash, ~~((and))~~ debit card transaction receipts, and tickets redeemed by TITO-enabled bill validators separately and independently. Count team members must place individual bills and coins of the same denomination ~~((and))~~, debit card transaction receipts, and tickets redeemed by TITO-enabled bill validators on the count table in full view of the closed circuit television cameras, and at least one other count team member must observe and confirm the accuracy of the count orally or in writing; and

(g) As the contents of each drop box are counted, a member of the count team must record the total amount of coin, chips, cash, ~~((and))~~ debit card transaction receipts, and tickets redeemed by TITO-enabled bill validators counted (the drop) on the master games report; and

(h) If a cage cashier has recorded the opener, closer, fill slips, and credit slips on the master game report before the count, a count team member must compare the series numbers and totals recorded on the master game report to the fill slips, credit slips, and table inventory slips removed from the drop boxes, confirm the accuracy of the totals, and must record, by game and shift, the totals we require on the master game report. Otherwise, the count team must complete all required information on the master game report; and

(i) The accounting department may complete the win/loss portions of the master game report independently from the count team if this is properly documented in the approved internal controls.

(2) The two person count team for licensees with card game gross gambling receipts of less than ~~((\$5 million))~~ \$5,000,000 in their previous fiscal year must conduct the count as follows:

(a) The contents of drop boxes must not be combined before the count team separately counts and records the contents of each box; and

(b) As each drop box is placed on the count table, a count team member must announce the game, table number, and shift, if applicable, loudly enough to be heard by all persons present and to be recorded by the audio recording equipment; and

(c) A count team member must empty the contents onto the count table; and

(d) Immediately after the contents are emptied onto the count table, a count team member must display the inside of the drop box to the closed circuit television camera, and show it to at least one other count team member to confirm that all contents of the drop box have been removed. A count team member must then lock the drop box and place it in the drop box storage area; and

(e) A count team member must separate the contents of each drop box into separate stacks on the count table by denominations of coin, chips, and cash and by type of form, record, or document; and

(f) One count team member must count, either manually or mechanically, each denomination of coin, chips, cash, ~~((and))~~ debit card transaction receipts, and tickets redeemed by TITO-enabled bill validators separately and independently. The count team member must place individual bills and coins of the same denomination ~~((and))~~, debit card transaction receipts, and tickets redeemed by TITO-enabled bill validators on the count table in full view of the closed circuit television cameras, and the other count team member must observe and confirm the accuracy of the count orally or in writing; and

(g) As the contents of each drop box are counted, a member of the count team must record the total amount of coin, chips, cash, ~~((and))~~ debit card transaction receipts, and tickets redeemed by TITO-enabled bill validators counted (the drop) on the master games report; and

(h) As the count is occurring, a surveillance employee must record in the surveillance log the total chips cash, ~~((and))~~ debit card transaction receipts, and tickets redeemed by TITO-enabled bill validators counted for each drop box and the announcement by the count team of the combined dollar count of all drop boxes; and

(i) If a cage cashier has recorded the opener, closer, fill slips, and credit slips on the master game report before the count, a count team member must compare the series numbers and totals recorded on the master game report to the fill slips, credit slips, and table

inventory slips removed from the drop boxes, confirm the accuracy of the totals, and must record, by game and shift, the totals we require on the master game report. Otherwise, the count team must complete all required information on the master game report; and

(j) The accounting department may complete the win/loss portions of the master game report independently from the count team if this is properly documented in the approved internal controls.

(3) The two person count team for licensees with card game gross gambling receipts between (~~(\$5 million and \$15 million)~~) \$5,000,000 and \$15,000,000 in their previous fiscal year and use a currency counter must conduct the count as follows:

(a) The currency counter to be used must meet the following requirements:

(i) Automatically provides two separate counts of the funds at different stages in the count process. If the separate counts are not in agreement during the count process and the discrepancy cannot be resolved immediately, the count must be suspended until a third count team member is present to manually complete the count as set forth in subsection (1) of this section until the currency counter is fixed; and

(ii) Displays the total bill count and total dollar amount for each drop box on a screen, which must be recorded by surveillance.

(b) Immediately prior to the count, the count team must verify the accuracy of the currency counter with previously counted currency for each denomination actually counted by the currency counter to ensure the counter is functioning properly. The test results must be recorded on the table games count documentation and signed by the two count team members performing the test; and

(c) The currency counter's display showing the total bill count and total dollar amount of each drop box must be recorded by surveillance during the count; and

(d) The contents of drop boxes must not be combined before the count team separately counts and records the contents of each box; and

(e) As each drop box is placed on the count table, a count team member must announce the game, table number, and shift, if applicable, loudly enough to be heard by all persons present and be recorded by the audio recording equipment; and

(f) A count team member must empty the contents onto the count table; and

(g) Immediately after the contents are emptied onto the count table, a count team member must display the inside of the drop box to the closed circuit television camera, and show it to the other count team member to confirm that all contents of the drop box have been removed. A count team member must then lock the drop box and place it in the drop box storage area; and

(h) Count team member(s) must combine all cash into one stack and separate the contents of each drop box into separate stacks on the count table by denomination of coin and chips, by type of form, record, or document; and

(i) Count team members must place all of the cash from a drop box into the currency counter which will perform an aggregate count by denomination of all of the currency collected from the drop box; and

(j) One count team member must count each denomination of coin, chips, (~~and~~) debit card transaction receipts, and tickets redeemed by TITO-enabled bill validators separately and independently by placing coins and chips of the same denomination on the count table in full view of the closed circuit television cameras, and the other

count team member must observe and confirm the accuracy of the count orally or in writing; and

(k) As the contents of each drop box are counted, a member of the count team must record the total amount of coin, chips, cash, ~~((and))~~ debit card transaction receipts, and tickets redeemed by TITO-enabled bill validators counted (the drop) on the master games report; and

(l) As the count is occurring, a surveillance employee must record in the surveillance log the currency counter accuracy information in (b) of this subsection, currency verification amount, debit card transaction receipt amount, ticket redemption amount, total bill and dollar count of each drop box and the announcement by the count team of the combined dollar count of all drop boxes; and

(m) If a cage cashier has recorded the opener, closer, fill slips, and credit slips on the master game report before the count, a count team member must compare the series numbers and totals recorded on the master game report to the fill slips, credit slips, and table inventory slips removed from the drop boxes, confirm the accuracy of the totals, and must record, by game and shift, the totals we require on the master game report. Otherwise, the count team must complete all required information on the master game report; and

(n) The accounting department may complete the win/loss portions of the master game report independently from the count team if this is properly documented in the approved internal controls.

AMENDATORY SECTION (Amending WSR 23-11-108, filed 5/19/23, effective 6/19/23)

**WAC 230-15-620 Concluding the count.** (1) After the count team finishes their count, the cage cashier or accounting department employee must verify the contents of the drop boxes.

(2) In the presence of the count team and before looking at the master game report, the verifier must recount the cash, coin, chips, ~~((and))~~ debit card transaction receipts, and tickets redeemed by TITO-enabled bill validators either manually or mechanically.

(3) The verifier must sign the master game report verifying that the cash and debit card transaction receipt counts are accurate.

(4) Each count team member must sign the report attesting to the accuracy of the information recorded.

(5) After the report is signed, the master game report must be taken directly to the accounting department, along with the debit card transaction receipts, requests for fills, the fill slips, the requests for credit, the credit slips, tickets redeemed by TITO-enabled bill validators, and the table inventory slips removed from drop boxes. The cage cashiers must not be allowed access to any of these records.

**TICKET IN TICKET OUT (TITO) SYSTEM REQUIREMENTS IN HOUSE-BANKED CARD ROOMS**

NEW SECTION

**WAC 230-15-755 "Ticket in ticket out (TITO) system" defined.** For the purposes of this chapter, "ticket in ticket out (TITO) system" refers to electromechanical devices equipped with a ticket in ticket out (TITO) enabled bill validator and a ticket validation system that allows for the reporting issuance, validation, and acceptance of tickets.

NEW SECTION

**WAC 230-15-758 "Ticket" defined.** For the purposes of this chapter, a "ticket" means an encoded paper ticket or voucher dispensed by an approved TITO-enabled bill validator.

NEW SECTION

**WAC 230-15-761 "Invalid ticket" defined.** For the purposes of this chapter, "invalid ticket" means an encoded paper ticket or voucher that is expired, damaged/unreadable, and/or voided.

NEW SECTION

**WAC 230-15-764 "TITO-enabled bill validator" defined.** For the purposes of this chapter, "TITO-enabled bill validator" means an electromechanical device that accepts United States currency (bills) and issues, validates, and accepts encoded paper tickets or vouchers.

NEW SECTION

**WAC 230-15-767 "Ticket redemption kiosk" defined.** For the purposes of this chapter, "ticket redemption kiosk" means an electromechanical device that accepts redeemable encoded tickets or vouchers issued from TITO-enabled bill validators for cash.

NEW SECTION

**WAC 230-15-770 Ticket requirements.** Tickets printed by TITO-enabled bill validators must have the following minimum standards:

- (1) Card room name; and
  - (2) Date and time the ticket was generated; and
  - (3) Dollar value of ticket, printed both numerically and in text;
- and
- (4) A unique identifier such as a magnetic strip or bar code; and
  - (5) A primary and secondary validation number; and
  - (6) A statement that the ticket will expire in 30 days; and
  - (7) Be the same size and dimension as United States currency (bills).

NEW SECTION

**WAC 230-15-773 Requirements for ticket validation system.** Ticket validation systems must:

- (1) Not use, permit the use of, validate, or redeem tickets issued by another licensee; and
- (2) Be able to identify invalid tickets and issued tickets, and notify the cashier, dealer, or kiosk, which is applicable, if:
  - (a) The validation number cannot be found; or
  - (b) The ticket has already been redeemed; or
  - (c) The amount on file for the ticket does not match; and
- (3) Uniquely identify TITO-enabled bill validators and ticket redemption kiosks connected to it; and
- (4) Be able to generate the following reports to be reconciled with all validated/redeemed tickets:
  - (a) Ticket issuance report; and
  - (b) Ticket redemption report; and
  - (c) Ticket liability report; and
  - (d) Ticket drop variance report; and
  - (e) Transaction detail report that shows all tickets generated and redeemed by a TITO-enabled bill validator and ticket redemption kiosk; and
  - (f) Cashier report, which is to detail individual tickets and the sum of tickets paid by a cage cashier or ticket redemption kiosk; and
- (5) Employ encryption standards suitable for the transmission and storage of all confidential or sensitive information between all components of the system; and
- (6) Not allow for any wireless connections or communication; and
- (7) Can only be connected to authorized gambling equipment; and
- (8) Have all servers and components that store sensitive information in a locked secure enclosure with both camera coverage and key controls in place; and
- (9) Have a machine entry authorization log (MEAL) for all entries into a locked area that indicates the date, time, purpose of entering the locked area(s), and the name and employee number of the employee doing so; and
- (10) Maintain an internal clock that reflects the current time and date that shall be used to provide the following:
  - (a) Time stamping of significant events; and

- (b) Reference clock for reporting; and
- (c) Time stamping of configuration changes; and
- (11) Have a recent backup that is securely stored, separate from the system, in case of catastrophic failure and the ticket validation system cannot be restarted. Backups must be retained for a period of at least two years. Backups must contain:
  - (a) Significant events; and
  - (b) Accounting information; and
  - (c) Auditing information; and
  - (d) All information utilized in the ticket redemption and issuance process; and
- (12) Be connected to a device that provides surge protection and a temporary power source, such as a uninterruptible power supply (UPS), to provide a means for an orderly shutdown in the event of a main power system failure; and
- (13) Have no built-in facility where a casino user/operator can bypass system auditing to modify any database(s) directly; and
- (14) Log any changes made by a user to accounting or significant event log information that was received from a device on the system. The log must include:
  - (a) Date data was altered; and
  - (b) Value prior to alteration; and
  - (c) Value after alteration; and
  - (d) Identification of personnel that made the alteration; and
- (15) Record significant events generated by any TITO devices on the system. Each event must be stored in a database(s) and include the following information:
  - (a) Date and time the event occurred; and
  - (b) Identify the device that generated the event; and
  - (c) A unique number/code that identifies the event; and
  - (d) A brief text that describes the event in the local language; and
- (16) Have a means by which any user accessing the system software, either by password, keycard, or PIN have a username or user number unique to that individual and log the date and time of access.

NEW SECTION

**WAC 230-15-776 Requirements for TITO-enabled bill validators.**

TITO-enabled bill validators must:

- (1) Only be used in conjunction with approved ticketing (TITO) systems; and
- (2) Be secure from unauthorized access, tampering, and bill/ticket removal; and
- (3) Only be installed at house-banked card game tables or in the cashier's cage; and
- (4) Only accept United States bills (no foreign currency) and be able to differentiate between genuine and counterfeit bills to a high degree of accuracy; and
- (5) Only accept tickets from the licensed card room they are installed at; and
- (6) Be able to identify invalid tickets; and
- (7) Not accept promotional tickets, coupons, or vouchers such as free play or match play; and

- (8) Not allow redemption of tickets for cash at house-banked card game tables; and
- (9) Be equipped with a drop box/cassette to collect the bills and/or tickets inserted into the bill validator; and
- (10) Be equipped with a ticket printer designed to detect paper jams, paper out, and print failure; and
- (11) Not be capable of offering an element of chance and/or skill in the determination of prizes; and
- (12) Not contain some form of activation to initiate a wager; and
- (13) Not be capable of delivering or determining an outcome from a gambling activity.

NEW SECTION

**WAC 230-15-779 Requirements for drop boxes/cassettes in TITO-enabled bill validators.** Ticket-enabled bill validators must be equipped with a drop box/cassette to collect, store, and secure currency and tickets.

- (1) Drop boxes/cassettes must:
  - (a) Be housed in a locked compartment; and
  - (b) (i) Have a separate lock to open the drop box/cassette; and
  - (ii) The locks to secure the compartment housing and drop box/cassette must be different from each other; and
  - (c) Have labels on the lockable drop boxes/cassettes with a permanent number clearly visible which corresponds to a permanent number on the gambling table to which the electronic bill acceptor is affixed; and
- (2) The transportation and storing of drop boxes/cassettes in TITO-enabled bill validators must adhere to WAC 230-15-590 and 230-15-600.

NEW SECTION

**WAC 230-15-782 Requirements for ticket redemption kiosks.** Ticket redemption kiosks must:

- (1) Only be used in conjunction with approved ticketing (TITO) systems; and
- (2) Be secure from unauthorized access, tampering, and bill/ticket removal; and
- (3) Contain a lockable ticket and currency storage box which retains tickets and currency accepted by the kiosk. The kiosk must have:
  - (a) One lock securing the compartment housing the currency drop boxes/cassettes; and
  - (b) (i) One lock securing the contents of the storage box; and
  - (ii) The locks to secure the compartment housing and storage box must be different from each other.
- (4) Only accept tickets from the licensed card room they are installed at; and
- (5) Be capable of validating ticket values and dispensing an equivalent amount of cash; and
- (6) Only validate and pay out tickets up to \$1,000; and



- (7) Be able to identify invalid tickets; and
- (8) Not be allowed to accept cash to exchange for a ticket; and
- (9) Not be allowed to accept debit, credit, or EBT cards; and
- (10) Have a mechanism to generate a transaction history report with at least the following information:
  - (a) Date, time, ticket validations numbers, and amount of all ticket redemptions; and
  - (b) Total amount of ticket vouchers accepted; and
  - (c) Total count of ticket vouchers; and
- (11) Have a machine entry authorization log (MEAL) for all entries into locked areas of the kiosk that indicates the date, time, purpose of entering the locked area(s), and the name and employee number of the employee doing so; and
- (12) Not be capable of offering an element of chance and/or skill in the determination of prizes; and
- (13) Not contain some form of activation to initiate a wager; and
- (14) Not be capable of delivering or determining an outcome from a gambling activity.

# Cashless Gaming Could Increase Problem Gambling, Advocates Say

DATE PUBLISHED : FRIDAY, MARCH 26TH 2021

- Advocates worry cashless gaming will lead to rise in addiction
- Gamblers urged to set limits when using cashless payments
- UNLV, Sightline, Global Payments to study cashless wagering data

The adoption of cashless gaming by land-based casinos presents both new risks and opportunities when it comes to mitigating disordered gambling, according to problem gambling advocates.

Advances in payment technologies have caused massive disruption in the way consumers pay for everything from a cup of coffee to a new automobile, with casinos now belatedly opening the door to cashless wagering systems for slot machines.

Currently, regulators in Nevada, Pennsylvania and a half-dozen other U.S. states have signed off on the use of debit cards to buy chips at table games, or mobile wallets for use at slot machines.

But advocates worry about the impact that wider acceptance of cashless products will have on **problem gambling rates** as new payment options may turn at-risk gamblers into

problem gamblers.

“If you are utilizing cash to fund your gambling and you run out, there is that natural break in play, which research shows us is an important thing, with the very act of getting up and having to visit the ATM to get additional dollars,” said Brianne Doura-Schawohl, vice president of U.S. policy and strategic development at EPIC Risk Management.

Schawohl said the break in play provides necessary reflection time to assess the amount of time and the amount of money an individual has already spent.

“We know from research that gambling with credit and cashless activates a part of the brain to spend more,” Schawohl said. “Also utilizing money that you don’t have to gamble is never a good thing. Gambling should be accessed only through discretionary income that can be lost.”

Keith Whyte, executive director of the [National Council on Problem Gambling](#) (NCPG), agreed that “cashless presents significant additional risk for people with gambling problems or people who are vulnerable to gambling problems.”

Whyte said most cashless systems have responsible gambling features built in, but the “big thing everyone is missing is that it requires active promotion for players to know the features are available and to use them.

“We strongly believe that players should have to set limits, or at least opt-out [from setting them], rather than having to hunt through the entire system to opt-in,” he said.

“If the seat belts for a new car are stored in the trunk, many people will never get around to installing and using them, which greatly increases their risk of harm.”

The NCPG has urged the gaming industry and regulators to encourage people who gamble to set their own limits of time and money; use personalized responsible gambling messages; and allow players to self-exclude from gambling platforms and venues.

Other suggestions include allowing players to synchronize their exclusions with venue and state exclusion lists, research signs of problematic play, and develop models to help predict and prevent excessive usage.

If Schawohl was designing a cashless payments system, she said she would require the utilization of limit-setting programs to establish limits on the number of deposits a player

could make per day, week and month and place a cap on the number of cards that can be attached to an account.

She would also include real-time updates letting a customer know how much money they have, how many deposits they have made, and how much they have won or lost over the course of their play.

Still, Schawohl said cashless wagering in casinos is not all “doom and gloom,” and the same technology that might be increasing risk can also provide ways of delivering effective responsible gambling messages, easier access to self-exclusions, timeouts and other stronger safeguards.

Approximately 1 percent of the adult population in the U.S. has a severe gambling problem, according to the International Center for Responsible Gaming (ICRG).

So will that rate increase as more customers use digital wallets on their mobile phones to wagering at slot machines or table games?

“There’s very little research on this topic so it’s difficult to speculate as to whether it affects gambling disorder rates,” said Christine Reilly, an ICRG spokeswoman. “More research is needed.”

Alan Feldman, distinguished fellow in responsible gaming for the University of Nevada, Las Vegas’ (UNLV) International Gaming Institute, agreed.

Feldman said he expects the IGI Payments Collaborative, a partnership formed last year between UNLV’s International Gaming Institute, Sightline Payments and Global Payments Gaming Solutions, to provide needed data on disorder rates.

“Both companies will be turning over a tremendous amount of data,” Feldman said. “It will take time, but we are going to go through it and learn there are some policies that need to be changed and some policies that are working.”

Taking its inspiration from the ICRG, the collaborative’s objective is to provide a neutral, scientific, data-driven foundation for policymakers and regulators to make policy decisions in the future.

Feldman said the discussion over cashless gaming is very different in 2021 than it was 20 years ago with the advent of ticket-in, ticket-out systems for gaming machines due to

where we are as a society. For younger people, he said, it is now completely “normal and natural” to pay with a debit card or mobile phone.

“It is how they manage their finances,” Feldman said. “I haven’t written a check in 15 years. I appreciate it when merchants allow me to tap to pay. I realize I’m changing.”

“I appreciate casinos are thinking the same way,” he said.

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# What is the impact of cashless gaming on gambling behaviour and harm?

Sarah Hare

Schottler Consulting

July 2020

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## Executive summary

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This report presents a rapid review of research literature to examine the effects of cashless gaming from a gambling harm-minimisation perspective. Cashless gaming involves the use of non-cash gaming tokens for land-based gambling. The review was prepared during late June 2020 for the Victorian Responsible Gambling Foundation (the Foundation).

The Foundation sought to better understand the effects of cashless gaming on gambling behaviour and harm, given the potential for cashless gaming to become more widely used across Victoria due to COVID-19.

As a Foundation role is to address the determinants of problem gambling, it was considered important to understand the potential for widespread cashless gaming to harm the Victorian community.

### Key objectives

Within this context, specific objectives of the rapid review were to:

1. **Examine the national and international context of cashless payments**
2. **Explore the possible effects of cashless gaming as identified in research literature**
3. **Identify recent jurisdictional developments in cashless gaming due to COVID-19**

### Cashless gaming in Victoria

On 30 January 2019, the Gambling Amendment (Cashless Gaming) Regulations 2019 introduced new regulations allowing non-cash gaming tokens to be made available at Victorian pub and club EGM venues. Technical standards were also published by the Victorian Commission for Gambling and Liquor Regulation (VCGLR) for the operation of cashless gaming on EGMs.

Technical standards permit both ticket in ticket out (TITO) and card based cashless (CBC) gaming to be provided in Victorian EGM venues. While Crown casino also provides cashless gaming, separate legislation exists for casino operations.

Within this context, the Foundation wanted to gain a comprehensive understanding of research that may provide insight into the possible effects of cashless gaming, should it be more widely adopted across Victorian pubs and clubs due to COVID-19.

### Types of gambling of relevance to this review

Gambling products in scope of the current review were EGMs and gambling products in land-based venues and retail outlets (e.g., sports or race betting at the pub, keno at the club, retail lottery purchases, etc.).

While some useful research relating to online gambling is drawn upon in this review, the use of cashless payment technologies for online gambling specifically was considered outside the scope of products of interest to the review. Interactive gambling more generally, however, is acknowledged as a special topic that may also benefit from future research on payment technologies.



## Findings from consumer behaviour and cognitive psychology literature

Major findings of the review are presented as follows:

1. Consumer behaviour literature indicates that cashless payment methods are generally associated with increased expenditure. Evidence appears to support that this applies to credit cards, debit cards, and potentially also mobile payments (using eWallets).
2. Literature relating to the 'pain of payment' – including recent neurological evidences – suggests that cashless payment methods are largely associated with less 'pain of payment' when compared to cash. This suggests that cashless payment methods have an 'easy money' effect and that cash is better for expenditure regulation.
3. Low salience payments have been found to be difficult to track and undermine budgeting, when compared to high salience payments. Electronic transactional information (e.g., bank statements) has also been found to be more complex to interpret, when compared to printed statements.
4. Certain segments in the community may have difficulties with working memory or mental accounting, which is required in budgeting and expenditure management.

These may include older people, people with comorbidities – such as anxiety and depression – and people with low financial literacy and low education. Such groups may potentially experience issues with transactional expenditure information in cashless gaming.

## Findings relating to cashless gaming from gambling research literature

1. Little gambling research has examined the unique effects of cashless gaming as a payment method, when compared to cash (as distinct from other features of cashless gaming such as pre-commitment).
2. Many of the benefits of cashless gaming have been conflated with the benefits of other gambling harm-minimisation tools (e.g., player tracking, pre-commitment effects have been confused with the effects of cashless gaming).
3. While the discrete effects of cashless gaming relative to cash have not been examined, some consumer benefits of cashless gaming have been claimed including:
  - a. The ability to store money on a card
  - b. Not having to have to wait for venue staff for hand-pay outs
  - c. Making it easier to move from EGM to EGM
  - d. Being able to transfer small amounts of money to and from the EGM credit meter
  - e. Being able to continue play uninterrupted (e.g., gamblers do not need to access EFTPOS for cash or interact with a staff member).
4. While some gamblers indicate that cashless gaming may help with management of gambling expenditure, others report that it makes expenditure management more difficult. This may highlight individual differences within gamblers (although the reasons for differences remain unclear).
5. Access to any cash amounts may facilitate gambling and especially in higher risk gamblers. This may be relevant to the amounts stored on cashless gaming cards.
6. Tokenisation of money tends to lead gamblers to spend more, when compared to cash (and presumably with less conscious reflection).

7. Online gambling has been found to be harmful to gamblers in part due to the cashless payment method and in part due to the tokenisation of money (i.e., credit/debit cards are used to gamble online and such cards are a token for money).
8. Eight structural characteristics of cashless gaming have potential to influence the level of gambling harm experienced by gamblers.

## **Other findings with implications for cashless gaming**

1. While many jurisdictions are increasingly moving towards cashless gaming, research also highlights that some vulnerable members of society may be at risk. In Australia, these may include both older people and people in the lower two income quartiles.
2. While research cannot identify how best to reduce the risks of cashless gaming, literature research points to some potential value of making the 'pain of payment' of cashless gaming equivalent to, or as close as possible, to cash.

## **Conclusion**

In conclusion, the current rapid review has identified substantial and concerning evidence that cashless gaming using monetary substitutes such as gaming cards will likely facilitate less controlled gambling behaviour and potentially lead to gambling harm in some consumers. It has also identified the potential for some vulnerable segments of society to be negatively impacted by cashless gaming.

This is largely attributed to research evidence that suggests that the 'pain of payment' in cashless payment methods is lower than when using cash.

Together, findings point to the need for further research to not only establish who is affected by cashless gaming (or whether all gamblers are affected), but to also identify how gambling may be affected by all payment methods including credit cards, debit cards and mobile payments using eWallets.

The second priority is to identify how such payments can be made closer to, or equivalent to, cash. The third priority is then to identify whether and how other harm-minimisation tools can be used to mitigate the effects of cashless gaming and associated cashless payment methods used in gambling.



## Cashless gambling and the pain of paying: effects of monetary format on slot machine gambling

Eve H. Limbrick-Oldfield, Candy Chua, Natalie Cringle, Kent MacDonald, Mario A. Ferrari, Ke Zhang & Luke Clark

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## Cashless gambling and the pain of paying: effects of monetary format on slot machine gambling

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### ABSTRACT

Advances in cashless technologies create a dilemma for gambling regulators. Research indicates that cash purchases entail a ‘pain of paying’ that is attenuated with more abstract forms of payment, yet limited research has directly tested the impact of mode of payment on gambling behavior. Across two experiments, community-recruited gamblers were randomized to use an authentic slot machine in the laboratory, under different conditions of monetary endowment. In Experiment 1 ( $n = 61$ ), participants were endowed with funds to play the slot machine, in either a cash or voucher format. In Experiment 2 ( $n = 48$ ), participants acquired the cash endowment as a windfall or from an earning task. In session-level analyses, bet size and bet volume did not vary as a function of monetary condition. In more sensitive trial-level analyses, no interactions involving the monetary manipulations were consistent across the two experiments. Data from both experiments indicated faster spin initiation latencies as a function of losing streak length, and slower spin initiation latencies and larger bet size as a function of the prior win magnitude. These trial-level analyses show systematic influences on gambling behavior in the laboratory environment, supporting the basic sensitivity of our design. Overall, our data provide weak evidence for the hypothesis that monetary factors influence gambling tendencies. Acknowledging the possibility of the null hypothesis, these data also highlight the methodological challenges with manipulating monetary value in gambling research, including the use of endowed funds, and controlling for sources of variability when using authentic slot machines.

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Gambling; slot machines; pain of paying; money; risk taking; decision-making


### Introduction

Money is a central feature of gambling (Binde 2013). Modern commercial gambling is an activity that necessarily costs money, with a chance of winning a larger prize than the amount bet. Regulatory issues surrounding money and gambling are becoming more important as payment technologies evolve (Gainsbury and Blaszczynski 2020). In the North American casino landscape, bill acceptors and Ticket-In Ticket-Out (TITO) interfaces began to replace coin operation on electronic gaming machines (EGMs) in the early 2000s. A contemporary slot machine will accept either a banknote or TITO voucher, but wins or remaining funds on that machine can only be cashed out as a voucher, which the gambler must take to a cashier desk to convert back into actual cash. Recent technological advances could readily enable card-based payments (either debit cards, credit cards or venue loyalty-card programs) or contactless payments (e.g. via mobile phone) (Parke et al. 2008) in gambling venues, subject to regulatory approval. While most jurisdictions are yet to embrace these developments, regulators may

anticipate industry pressure, given the added convenience as our societies become ‘cashless’. These developments may be amplified in the wake of the COVID-19 pandemic, which restricted the use of physical cash in many countries (e.g. Wilson 2020), and precipitated the temporary closure of land-based gambling venues, supporting a migration to online gambling (Håkansson 2020; Price 2020). Relatively little is known about how gambling payment format affects gambling behavior, and whether these developments could exacerbate gambling-related harm (Swanton and Gainsbury 2020).

Economic theory stresses that money is fungible: one \$20 bill is worth the same as any other \$20 bill. At the same time, not all \$20 transactions are equal. For example, consumer behavior changes as a function of which ‘mental account’ a payment comes from (Thaler 1985) (see Muehlbacher and Kirchler 2019 for review). Each purchase is associated with a psychological cost termed the ‘pain of paying’ (Prelec and Loewenstein 1998; Prelec and Simester 2001), which is reconciled against the value of the good that

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 Supplemental data for this article can be accessed [here](#).

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is obtained. Several factors are thought to modulate the psychological pain experienced. Here we consider two specific factors; the method of payment, and how the money was obtained. Payments made with physical cash (i.e. bills or coins) are hypothesized to be more 'painful' than cashless payments, and research has found that people spend more when using more abstract forms of payment, such as credit cards (Soman 2003; Thomas et al. 2011; Meyll and Walter 2019), vouchers (Raghubir and Srivastava 2008), or mobile payment technology (Meyll and Walter 2019). By some accounts, cash payments may differentially recruit actual pain-related circuitry in the brain e.g. the insula (c.f. Banker et al. 2021). Various boundary conditions appear to exist for pain-of-paying effects (See-To and Ngai 2019) and it is conceivable that these effects may be changing over time as the use of real-world cash declines, and cashless payments become the norm.

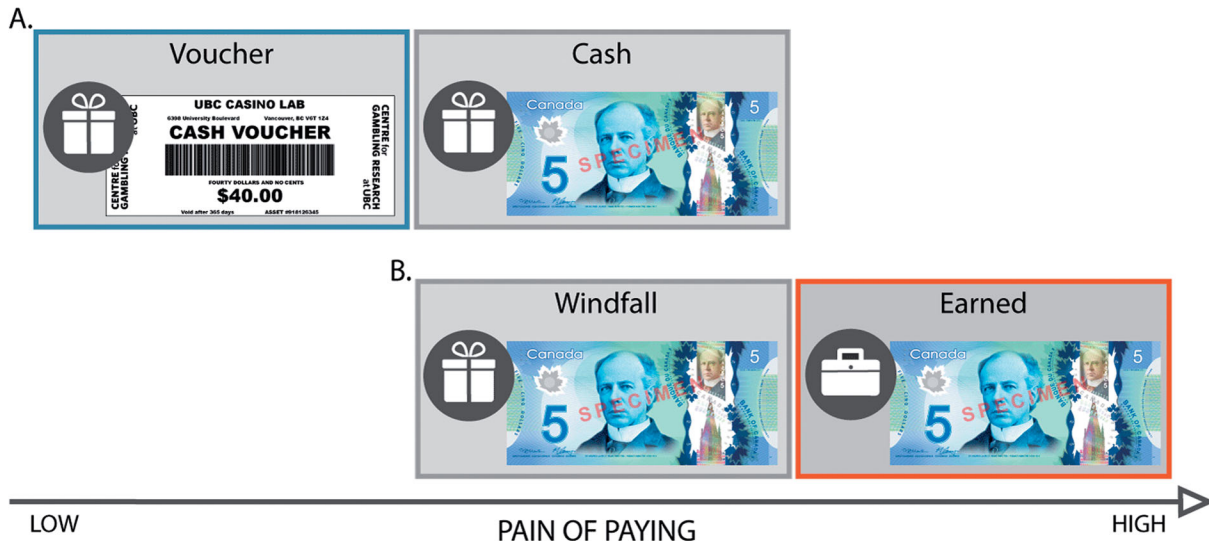
These influences have received limited attention in the specific context of gambling behavior and harmful gambling. A number of studies have tested a coarse comparison of gambling for money, versus non-incentivized predictions or gambling for points (e.g. Meyer et al. 2000; Ladouceur et al. 2003; Weatherly and Brandt 2004; Wulfert et al. 2005). These studies consistently indicate increased arousal and altered gambling behavior when money is at stake, but these designs do not speak to the contemporary discussions around cashless technologies, in which the money is real but takes a less tangible form. Other studies have examined how the balance information is displayed in electronic gaming machines (EGMs), in either a cash (e.g. \$9.90) or credit (990) format. In an observational study in regular gamblers, 86% reported using the cash display setting and 58% of these endorsed the view that this feature helped to control their gambling (Ladouceur and Sévigny 2009). In a laboratory study manipulating the availability of a cash counter, pathological gamblers gave lower ratings for 'difficulty of stopping play' in the cash counter-on compared to the -off condition (Loba et al. 2001). Other work has considered the removal of high denomination bill acceptors from EGMs (Blaszczynski et al. 2005; Sharpe et al. 2005). Under this configuration, a gambler could enter 5 × \$20 bills but would not be permitted to insert a single \$100 bill. People with gambling problems were more likely than the recreational gamblers to use high denomination bills for gambling, but restricting this feature had no discernible impact on gambling behavior. The clear differences between these manipulations highlight the limited nature of the current evidence base for monetary influences on gambling (Palmer et al. 2021). In these examples, the use of cash displays and restrictions on high denomination bills may be considered subtle manipulations that might 'nudge' gamblers toward healthy behavior, but these experiments do not directly address the possible impacts of cashless modes of payment on gambling behavior.

A further factor that modulates the pain of paying is the source of the money. According to the 'house money effect' (Thaler and Johnson 1990), participants are more willing to spend money that has been won than earned money. In

'real-effort' procedures in behavioral economics, participants engage in an initial task in which funds are earned through an effortful, monotonous procedure, to create a sense of ownership (Eral et al. 2011). Earned funds were associated with less spending compared to windfalls (Reinstein and Riener 2012; Corngnet et al. 2015), and higher levels of earned income were associated with lower donations on a subsequent charitable giving task (Eral et al. 2011). Earning manipulations have not been directly examined in a gambling context. In a field study of 'windfalls', casino patrons who received a free-credit voucher upon entry actually gambled less, in contrast to the house money effect (Rüdisser et al. 2017). As laboratory experiments on gambling typically rely on endowed funds (akin to a windfall), some studies have sought to encourage participants to treat the endowment as their own money. When playing a slot machine simulator, participants who initially saw and held their cash endowment gambled less and left with more money than those who were not given this opportunity (Weatherly et al. 2006). Another study found no difference in behavior between participants who were shown a picture of the money, versus no picture (Brandt and Martin 2015).

In the present study, we manipulated monetary format in two experiments using authentic multi-line slot machines housed in a laboratory environment. Across both experiments, we hypothesize that endowment conditions that increase the pain of paying would decrease risky gambling behavior, and vice versa (see Figure 1). In Experiment 1, we compared a standard cash endowment with a voucher condition, based on a realistic TITO voucher. We predicted that the voucher would be associated with reduced pain of paying and thus increased gambling intensity. In Experiment 2, we compared a 'windfall' endowment with an earned condition based on a real-effort procedure, predicting that the earned condition would experience increased pain of paying and thus decreased gambling intensity. In each experiment, the primary analyses of gambling intensity relied on the total number of bets and the average bet size, aggregated over the session. Notably, our cash condition in Experiment 1 and the windfall condition in Experiment 2, although named differently, had highly comparable endowment procedures (see Figure 1).

A further 'trial-level' analysis was undertaken to examine the amount bet, and the pace of play, as a function of a number of in-game factors that could not be controlled in the context of an authentic slot machine game (Figure 2). Inspired by behavioral research on the 'micro analysis' of alcohol consumption and smoking (Gust et al. 1983; Davidson et al. 1999; Lee et al. 2003), this was expected to be a more sensitive analysis, taking into account the number of successive losses, the size of any previous win, and the current in-game balance. For example, the post-reinforcement pause (PRP) refers to a slowing in the time taken to initiate the spin, following a winning outcome compared to a loss (Delabbro and Winefield 1999; Dixon et al. 2013; Chu et al. 2018). (Note this effect has both an appetitive/hedonic component and an aversive/frustrative component, Eben et al. 2020). Both the PRP effect and the average bet size



**Figure 1.** The pain of paying hypothesis. As the pain of paying increases, risky behavior should decrease. (A) Hypothesis 1 predicts increased gambling when participants receive the money to gamble as a voucher, compared to cash. (B) Hypothesis 2 predicts decreased gambling when participants earn money to gamble, compared to a cash windfall. Image source for \$5 bills: Bank of Canada.



**Figure 2.** Trial structure for the trial-level analysis. Spin initiation latency and next bet size (in red) were analyzed as a function of the current state of the machine at \*, after the outcome.

also scale with the *size* of a prior win (Tremblay et al. 2011; Dixon et al. 2013). The number of successive losses can also modulate the bet size (Studer et al. 2015; Tobias-Webb et al. 2016); and putatively, the machine’s current balance may serve as a reference point to elicit either loss chasing (when losing) or a house money effect (when in profit) (c.f. Chapman et al. 2019). Our trial level analyses tested for these systematic influences, in order to examine the sensitivity of our basic approach (i.e. studying authentic slot machines in a laboratory environment) and the consistency of any effects across the two experiments.

**Methods**

This study was approved by the Behavioral Research Ethics Board at the University of British Columbia (H16-01168). Participants provided written informed consent prior to participation.

**Participants**

For both experiments, participants were recruited through advertisements online (Craigslist, Kijiji, and departmental websites) and in local newspapers. Participants were eligible for inclusion if they had gambled on slot machines (land-based or online) in the past three months, were 19 years or older, and had normal or corrected-to-normal vision. Prior to participation, individuals were screened for eligibility by telephone. Individuals were excluded if they scored greater than seven on the Problem Gambling Severity Index (PGSI)

(Ferris and Wynne 2001), or had ever sought treatment for gambling problems or enrolled in voluntary self-exclusion. Further exclusion criteria were a history of neurological illness, head injury, or psychiatric hospitalization.

**Experiment 1: Cash vs voucher**

Data were collected from 69 participants and complete data is reported from n = 61 (cash = 30, voucher n = 31). Eight participants could not be included due to early problems with our video capture procedures from the slot machine session.

**Experiment 2: Windfall vs earned**

Data were collected from 53 participants and complete data is reported from n = 48 (windfall n = 28, earned n = 20). Data from one participant was excluded as they did not meet the inclusion criteria, one participant had incomplete video data, and three participants in the Earned condition did not engage with the earnings task.

**Procedures**

**Experiment 1: Cash vs voucher**

Participants attended a single test session lasting approximately two hours. Upon arrival, participants were randomly assigned to the ‘voucher’ or ‘credit’ group. In a standard testing room, participants completed the consent procedure and PGSI administration, followed by some further questionnaire measures and a computerized decision-making



task (to be reported elsewhere) on which they could win a small amount of money. Participants were given written instructions for the slot machine session and were informed that the EGM video feed would be recorded. The slot machine used was Great Wall II (Williams Interactive, WMS), which was provided to our laboratory by the British Columbia Lottery Corporation (see [Supplementary S1](#)). Participants were instructed that they would have up to 30 minutes to play the slot machine. This included a fixed period, followed by a further period when they were free to stop at any time. The end of the fixed period was indicated by flashing the ambient lighting. If the participant chose to stop playing before the 30 minutes ended, or ran out of machine credits, they were asked to remain in the lab, and were given neutral reading materials to pass the time. Any credits remaining at session end would be payable as a cash bonus (bonus = final balance divided by two, up to a maximum of \$50). For a study in community gamblers, we considered it important to use an incentive structure that was directly related to their gambling outcomes, while balancing the ethical consideration that with an authentic slot machine, some participants could win large jackpots.

Following the instructions, participants in the cash group were given \$40 (CAD) in \$5 bills, and were asked to count this money. Participants in the voucher group were given a \$40 paper slip modeled on the TITO vouchers used in local casinos. All participants were asked to write down the value of the funds received, on a participant payment sheet that also displayed the formula for the cash bonus. Participants were then taken to an adjacent room housing four slot machines, with comfortable casino stools and dim lighting.

Participants in the cash group were asked to load the \$40 into the machine. The voucher group saw and held the voucher, but the slot machine was pre-loaded with the \$40 credit before the participant entered the lab. Nevertheless, the participant was instructed to post the voucher into a black box attached to the machine next to the bill acceptor. As part of the manipulation, the slot machine display was set to the cash format in the cash group, and the credit format in the voucher group. As experienced slot machine gamblers, the participants were instructed that they could vary their betting style during the session across both the number of lines and the credits per line. Upon initiating the first bet, the experimenter started a timer and exited the room, in order to ensure a naturalistic environment and reduce observer effects (e.g. Rockloff and Dyer 2007). After ten minutes, the lights in the room were flashed on and off several times by the experimenter outside the room. After 30 minutes, the experimenter reentered the room and noted the machine balance. The participant returned to the original testing room, recorded their final balance and corresponding bonus payment on the payment form, and then completed some further questionnaires. Debriefing included both verbal and pamphlet information about myths associated with slot machines and local resources for problem gambling.

## **Experiment 2: Windfall vs earned**

Upon arrival participants were randomly assigned to the windfall or earned group. The first stage of the procedure was identical to Experiment 1, with the key difference that participants in the earned group completed an initial task to earn the funds for their subsequent slot machine session. The Navon task (Navon 1977) was chosen as a cognitively demanding but monotonous task in which the participant views compound letters (e.g. the letter H constructed from small Ss), and must identify the local letter (S or H) on each trial. Participants were instructed that they would earn 20 cents for each correct answer and they needed to earn \$40 for the slot machine session. When the participant had earned \$40, they were given the cash in \$5 bills, asked to count it and fill in the payment record, and placed the cash in their wallet, purse or pocket. In the windfall condition, participants were given a magazine to read instead of completing the Navon task, and after 20 minutes they were given the \$40 in \$5 bills. For the slot machine session, there were two adjustments from Experiment 1: i) we used a different slot machine, Buffalo Spirit (Williams Interactive, WMS) (see [Supplementary S1](#)), ii) the fixed period of required play was reduced from 10 to 5 minutes (see [Supplementary S2](#)).

**Data extraction.** Behavioral data capture from authentic slot machines is not straightforward. In these experiments, the gambling session was recorded by splitting the video output from the slot machine's internal computer, and events were extracted from this feed using custom python scripts (see [Supplementary S2](#)).

## **Analysis**

All analyses were carried out in R (R core team, Vienna) and R scripts are available online ([https://github.com/CGR-UBC/cashless\\_gambling\\_2021](https://github.com/CGR-UBC/cashless_gambling_2021)). We used identical analysis pipelines for both experiments. The analysis for Experiment 2 was pre-registered (<https://aspredicted.org/pb4m9.pdf>) based on preliminary analyses from Experiment 1. Ultimately, we made some deviations to our pre-registered plan for Experiment 2 (see [Supplementary S4](#)), due to unanticipated characteristics of the data that were revealed in further analysis of the Experiment 1 dataset.

For each experiment, group characteristics (age, PGSI, self-reported monthly slots expenditure) were compared between groups using Wilcoxon rank sum tests, due to these data not meeting the assumption of normality. Gender was compared between groups using Chi-square tests.

Our analyses comprise a 'session-level' comparison of the experimental conditions, i.e. the per participant summary variables from the slot machine session, and a further 'trial-level' analysis using multiple regression models on the entire trial-by-trial dataset (i.e. a single datasheet comprising all spins, from all participants). For the session-level analysis, we identified summary variables with the aim of distinguishing risk-taking and persistence as different expressions of gambling intensity (see [Supplemental S2](#) for further explanation): 1) mean bet size, 2) total bet amount across the

whole session, 3) machine balance at the end of the session, 4) total bet amount in the initial five minutes. Each of these scores were compared between conditions with Wilcoxon rank sum tests, due to deviations from normality in these data. Four participants were excluded from the session-level analyses: one participant in each experiment chose to stop playing before the end of the fixed period, and two participants in Experiment 2 accidentally cashed out (a button that renders the machine unplayable while an attendant is called). Available data for these participants were included in the trial-level analysis.

In the trial-level analysis, participant number was entered as a fixed effect. Fixed effects regression allows each participant to act as their own control, and this is well-suited for handling missing and unbalanced data (Allison 2005; Studer et al. 2015; Murch et al. 2017; Chu et al. 2018) (see also [Supplementary S3](#)). Separate models were run on trials following a win (i.e. any non-zero outcome), and trials following a loss, in order to include win size, and losing streak length, as linear predictors that were specific to these respective conditions. Due to the distribution of outcomes on a slot machine, the loss models inherently contained more trials than the win models. As well as distinguishing these two sets of models, two dependent variables were considered. The spin initiation latencies were analyzed with linear regression. A spin initiation latency was defined as the time from the end of a trial (when the button panel is released to allow the next bet) to the participant starting the next trial by pressing the 'spin' button. Trials with latencies over 10 seconds were removed (see [Supplementary Table S1](#) for the number of trials removed in each model, and [Supplementary S4](#) for the outlier approach), and the latency data were log transformed. Bet size was analyzed using logistic regression, as a binary variable indicating whether any given bet was below (or at) the participant's median (= 0), or above the participant's median (= 1), as a function of the prior outcomes. In summary, four models were specified for each experiment: a Win model, including the size of the prior win as a predictor, on the spin initiation latencies and the bet sizes; and a Loss model, including the losing streak length, on the spin initiation latencies and the bet sizes.

For the Loss models, the following regressors of interest were entered: loss streak length (number of trials since a win, log transformed), the current Machine Balance (in dollars), and the interaction of these regressors with group (Experiment 1: cash (0) vs voucher (1); Experiment 2: windfall (0) vs earned (1)). Coding the reference categories in this way facilitates the comparison of the cash and windfall conditions, which have similar endowment procedures. For the Win models, the win size (in cents, log transformed) and the interaction between log win size and group were the predictors of interest. Machine Balance was tested in the Loss models due to the greater number of available trials, and was entered as a regressor of no interest in the Win models. For all models, trial number (square root transformed) was entered as a regressor of no interest. For the spin initiation latency models, a binary variable indicating whether the bet amount was changed was entered as a

regressor of no interest, as any change in the betting configuration is likely to delay the initiation latency. For any models where significant ( $p < .05$ ) interactions with group were observed, the model was re-run with the groups reversed, to test for the effect in the alternative reference category.

Regression models were tested using robust regression, to reduce the impact of outliers and deviations from normality. All models were visually assessed to check residuals were normally distributed, and the weights applied during the robust regression were inspected to ensure that there was no systematic bias in the de-weighting of data points that may reduce the interpretability of the models. To produce a visual representation of the raw data, data from all participants were combined. Linear predictors were binned, and a boxplot was produced using these bins as categories. For the model predictions, predictions were made for every participant, and the mean of these predictions was plotted. All variables in the model (other than the variable plotted and group) were fixed at the median, with the exception of the binary bet change variable which was set at zero (no change). Therefore, the predicted plots show the effect of the variable of interest, controlling for the other variables in the model. In contrast, the raw data boxplots do not separate the effects of different variables, or account for the unbalanced nature of the data between participants.

## Results

Across both experiments, the groups did not differ significantly in age, gender, PGSI score, and self-reported past-month slot machine expenditure ([Table 1](#)). For the session-level analysis, we did not observe any group differences between the four summary variables in either experiment. Thus, neither monetary manipulation had an overall effect on gambling intensity at the session level ([Table 1](#)).

For the trial-level analysis, we observed several effects on betting behavior and spin initiation latency, as a function of the current state of the machine. The regression models are reported in full in [Supplemental Tables S3-S10](#).

### ***Models with spin initiation latency as the dependent variable***

#### ***Loss streak length***

In Experiment 1, we observed a significant negative effect of loss streak length in the cash group. As loss streak length increased, the spin initiation latencies became faster ([Table 2](#), [Figure 3\(A\)](#)). This effect was significantly modulated by group, and was not significant in the voucher group. In Experiment 2, we observed a significant effect in the windfall group, again finding that as loss streak length increased, the spin initiation latencies became faster ([Table 2](#), [Figure 3\(B\)](#)). This effect was not significantly different in the earned group.



**Table 1.** Demographic and session-level variables.

Expt 1a:	Cash	Voucher	
<i>Demographic variables</i>			
N	30	31	
Age	48 (21–79)	44 (20–71)	W = 384.5, r = 0.07, p = .58
Gender	12 male, 18 female	18 male, 13 female	$\chi^2(1) = 1.33, p = .25$
PGSI	1 (0–6)	1 (0–4)	W = 424.5, r = 0.09, p = .55
Slot spend per month (\$)	45 (0.5–500)	30 (1.6–400)	W = 490.5, r = 0.05, p = .72
<i>Session-level variables</i>			
Mean bet size (cents)	30.53 (1.41–102.23)	30.46 (1.83–102.23)	W = 502, r = .10, p = .45
Total bet (session) (\$)	52.75 (1.00–270.60)	54.37 (0.73–151.50)	W = 436, r = .026, p = .84
Final balance (\$)	26.24 (0–156.78)	14.50 (0–51.38)	W = 569.5, r = .23, p = .077
Total bet by 5 minutes (\$)	17.00 (0.61–44.70)	14.56 (0.45–63.80)	W = 461, r = 0.020, p = .88
Expt 1b:	Windfall	Earned	
<i>Demographic variables</i>			
N	28	20	
Age	42 (19–81)	53.5 (19–54)	W = 249, r = .066, p = .66
Gender	11 male, 16 female, 1 other	8 male, 12 female	$\chi^2(2) = .732, p = .69$
PGSI	2 (0–6)	1.5 (0–6)	W = 331.5, r = .16, p = .28
Slot spend per month (\$)*	50 (0–1000)	100 (2–500)	W = 257.5, r = .07, p = .64
<i>Session-level variables</i>			
Mean bet size (cents)	40.00 (4.89–117.66)	40.00 (3.52–188)	W = 258.5, r = .037, p = .80
Total bet (session) (\$)	49.13 (4.39–208.69)	47.76(9.79–166.17)	W = 242, r = .016, p = .92
Final balance (\$)	27.37 (0–100.35)	30.00 (0–104.83)	W = 236, r = .035, p = .82
Total bet by 5 minutes (\$)	18.40 (1.45–47.27)	12.56 (1.27–47.00)	W = 285, r = .12, p = .42

Continuous data violated the assumption of normality, so summary statistics are median and range, and Wilcoxon rank-sum tests were used to test for group differences. Three participants in experiment 1a and one participant in experiment 1b did not provide their age, and so are excluded from the age analysis. For the session-level variables, we excluded participants who had accidentally cashed out (two participants in experiment 1b) and participants who chose to stop gambling prior to the light flashing (one participant from each experiment). PGSI: problem gambling severity index; \$: Canadian dollar.

**Table 2.** Predictors of interest in the models of spin initiation latency.

	Beta	95% CI	p Value
<i>After a loss</i>			
<i>Exp1a: Cash vs credit</i>			
Log loss streak (CASH)	-0.056	-0.072, -0.039	<.001
Log loss streak * group	0.043	0.019, 0.068	<.001
Log loss streak (CREDIT)	-0.012	-0.031, 0.0062	.19
Machine balance (\$) (CASH)	0.00013	-0.00021, 0.0018	.9
Machine balance (\$) * group	0.0018	-0.00075, 0.0044	.165
<i>Exp1b: Windfall vs earned</i>			
Log loss streak (WINDFALL)	-0.020	-0.037, -0.0020	<.05
Log loss streak * group	-0.0055	-0.032, 0.021	.676
Machine balance (\$) (WINDFALL)	-0.0031	-0.0046, -0.0015	<.001
Machine balance (\$) * group	0.0072	0.0049, 0.0096	<.001
Machine balance (\$) (EARNED)	0.0041	0.0023, 0.0059	<.001
<i>After a win</i>			
<i>Exp1a: Cash vs credit</i>			
Log win size	0.10	0.074, 0.13	<.001
Log win size * group	0.0072	-0.030, 0.044	.699
<i>Exp1b: Windfall vs earned</i>			
Log win size (WINDFALL)	0.16	0.13, 0.18	<.001
Log win size * group	-0.094	-0.13, -0.058	<.001
Log win size (EARNED)	0.062	0.036, 0.089	<.001

Subscript text indicates in which group the effect is measured in (group 0). For predictors that are significantly modulated by group (p < .05), the model was repeated with the group order reversed, to measure the effect in group 1. Bold text indicates significant predictors. CI: confidence interval. See supplemental materials for full models, including regressors of no-interest.

**Machine balance**

In Experiment 1, we did not observe any effects of Machine Balance on the spin initiation latencies (Table 2, Figure 3(C)). In Experiment 2, we observed a significant negative effect of Machine Balance in the windfall group. As Machine Balance increased, the spin initiation latencies became faster. This effect was significantly modulated by group, and in the

earned group, as Machine Balance increased, spin initiation latencies became slower (Table 2, Figure 3(D)).

**Win size**

In Experiment 1, we observed a significant effect of win size on spin initiation latency. In the cash group, as the size of a previous win increased, the spin initiation latencies became slower (Table 2, Figure 3(E)), in line with a post-reinforcement pause effect. This effect did not differ across groups. In Experiment 2, we observed a significant effect of win size in the windfall group, again observing slower spin initiation latencies as the size of the win increased (Table 2, Figure 3(F)). This effect was attenuated (indicated by a significant win size by group interaction), but was still significant, in the earned group.

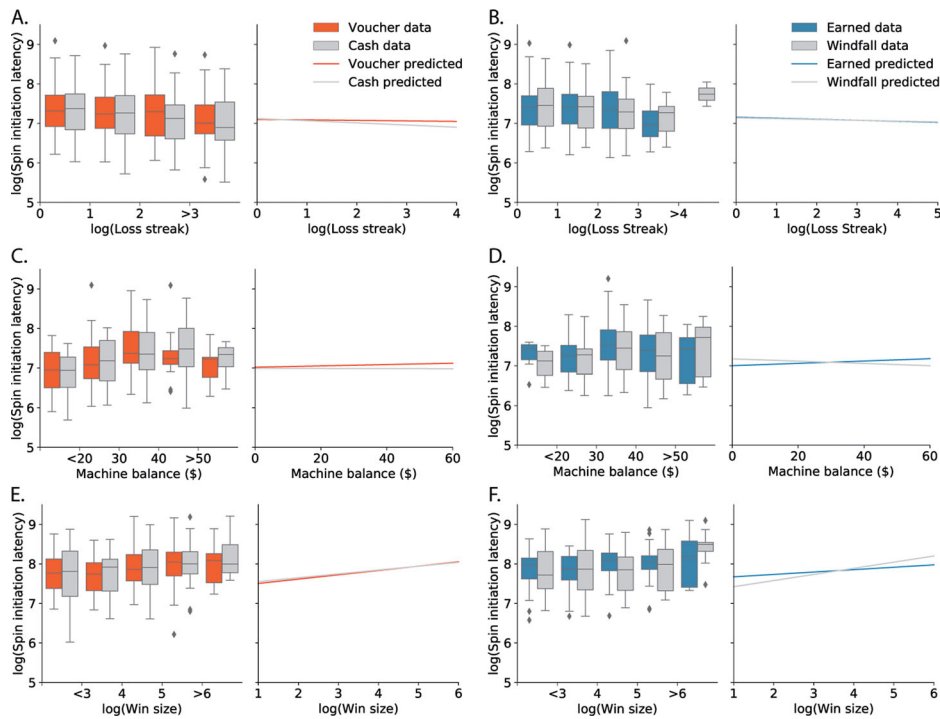
**Models with bet size as the dependent variable**

**Loss streak length**

In Experiment 1, we observed a significant effect of loss streak length on the bet size (Table 3, Figure 4(A)). In the cash group, as a losing streak increased, the probability of placing a high bet decreased. This effect did not differ significantly in the voucher group. In Experiment 2, the predictor for loss streak length was not significant (Table 3, Figure 4(B)).

**Machine balance**

In Experiment 1, we observed a significant effect of Machine Balance on the bet size (Table 3, Figure 4(C)). In the cash



**Figure 3.** Observed and predicted data for the spin initiation latency models. Observed data shown using Tukey boxplots. Spin initiation latency as a function of machine balance in experiment 1a (A) and experiment 1 b (B). Spin initiation latency as a function of loss streak length in experiment 1a (C) and experiment 1 b (D). Spin initiation latency as a function of the size of a win in experiment 1a (E) and experiment 1 b (F).

**Table 3.** Predictors of interest in the next bet models.

	OR	95% CI	p value
<i>After a loss</i>			
<i>Exp1a: Cash vs credit</i>			
Log loss streak <sub>(CASH)</sub>	0.92	0.90, 0.94	<.001
Log loss streak* group	1.06	0.94, 1.19	.326
Machine balance (\$) <sub>(CASH)</sub>	1.04	1.03, 1.05	<.001
Machine balance (\$) * group	1.00	0.98, 1.01	.504
<i>Exp1b: Windfall vs earned</i>			
Log loss streak <sub>(WINDFALL)</sub>	0.95	0.86, 1.05	.319
Log loss streak* group	1.07	0.92, 1.25	.373
Machine balance (\$) <sub>(WINDFALL)</sub>	1.00	0.99, 1.01	.836
Machine balance (\$) * group	1.00	0.98, 1.00	.788
<i>After a win</i>			
<i>Exp1a: Cash vs credit</i>			
Log win size <sub>(CASH)</sub>	1.70	1.36, 2.12	<.001
Log win size * group	0.88	0.64, 1.21	.430
<i>Exp1b: Windfall vs earned</i>			
Log win size <sub>(WINDFALL)</sub>	1.26	1.03, 1.54	<.05
Log win size * group	1.01	0.74, 1.38	.928

Subscript text indicates in which group the effect is measured in (group 0). CI: confidence interval; OR: odds ratio. See supplemental materials for full models, including regressors of no-interest.

group, as Machine Balance increased, the probability of placing a high bet increased. This effect did not differ significantly in the voucher group. In Experiment 2, the predictor for Machine Balance was not significant (Table 3, Figure 4(D)).

**Win size**

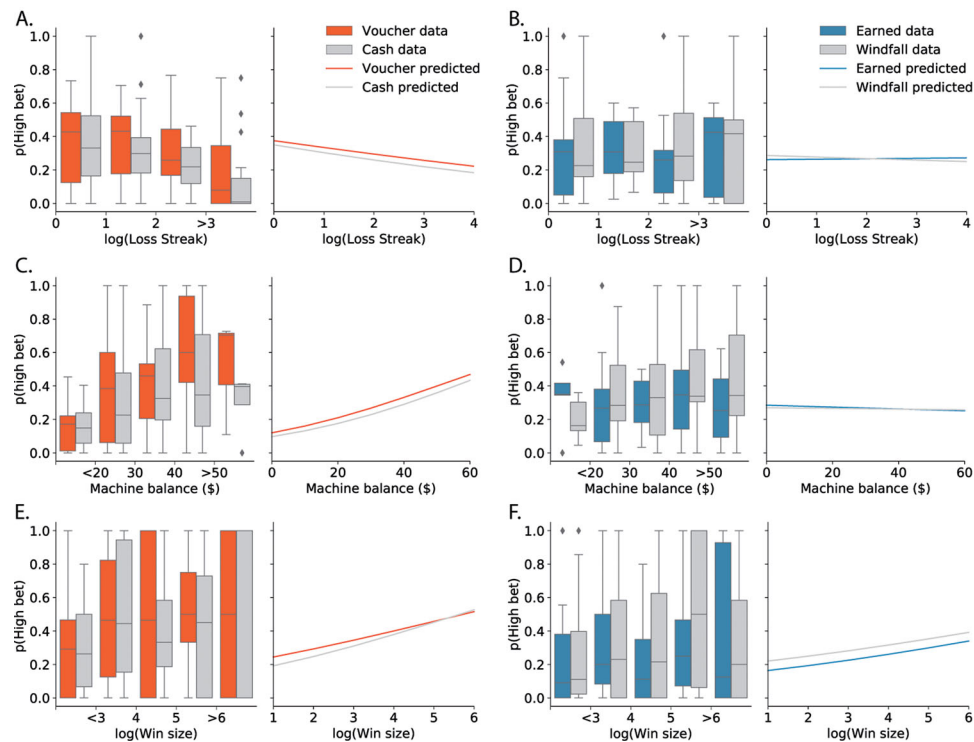
In Experiment 1, we observed a significant effect of the amount won on the size of the next bet (Table 3, Figure 4(E)). In the cash group, as win size increased, the probability of placing a high bet increased. This effect was not

modulated by group. In Experiment 2, we observed the same effect in the voucher group: as win size increased, the probability of placing a high bet increased (Table 3, Figure 4(F)) and again, this effect was not modulated by group.

**Discussion**

Across two experiments, we examined the impact of monetary manipulations in participants who were experienced slot machine gamblers, using an authentic slot machine housed in a laboratory environment. In Experiment 1, we manipulated the mode of payment, by comparing cash and voucher conditions. In Experiment 2, we manipulated how the money was acquired, by comparing earned and windfall conditions. We did not find evidence to support our predictions, inspired by the ‘pain of paying’ hypothesis, that monetary factors would influence session-level gambling intensity. Neither measures of average bet size nor overall bet volume differed significantly by mode of payment (Experiment 1) or how the money was acquired (Experiment 2).

Due to the variability that is inherent to using real EGMs, our trial-level analysis tested for effects of monetary condition in the context of several game-level factors. This was, effectively, a more sensitive ‘manipulation check’ of gambling in our laboratory environment. These analyses indicated systematic effects on bet amount and speed of play, as a function of losing streak length and the size of a previous win. In discussing these analyses, we emphasize effects that were consistent across the cash condition (Experiment 1) and the windfall condition (Experiment 2), as largely comparable conditions. Machine balance, a third



**Figure 4.** Observed and predicted data for the next bet size models. Observed data shown using Tukey boxplots. Probability of the next bet being higher than the participants median bet as a function of machine balance in experiment 1a (A) and experiment 1b (B). Probability of the next bet being higher than the participants median bet as a function of loss streak length in experiment 1a (C) and experiment 1b (D). Probability of the next bet being higher than the participants median bet as a function of the size of a win in experiment 1a (E) and experiment 1b (F).

game-level predictor, did not exert consistent effects from this perspective. On speed of play, we observed a significant effect of losing streak length on spin initiation latencies: participants initiated their next bet more quickly as the number of sequential losses increased. This loss-induced impulsivity was previously observed on the trial immediately following a loss (Verbruggen et al. 2017; Eben et al. 2020) and our data extend this effect, showing that this speeding accumulates over a sequence of losses. This effect may constitute an over-looked expression of loss chasing, whereby gamblers respond in a faster and more uncontrolled way on losing streaks (Zhang and Clark 2020).

In the win models, the magnitude of wins also exerted a reliable effect on both the initiation speed and the size of the next bet. As win magnitude increased, the spin initiation latencies slowed. Prior work has shown that this ‘post-reinforcement pause’ scales with win magnitude in gamblers playing a simulated slot machine game (Dixon et al. 2013; 2014; 2019). Our data extend these findings, showing the high sensitivity of this variable to reward value during authentic slot machine use. The corresponding effect on the size of the next bet could be interpreted as a house money effect (Thaler and Johnson 1990) or in terms of an availability heuristic (Croson and Sundali 2005), that the prospect of further wins is easily brought to mind, encouraging a high wager. This effect also accumulates with winning streak length in a recent analysis of baccarat gambling (Abe et al. 2021). The collective results of the trial-level analyses demonstrate the sensitivity of our dependent variables and modeling approach for investigating slot machine behavior in the

laboratory environment. Although participants were not playing with their own money in a real casino, the trial-level predictors are psychologically plausible, and reproducible across the cash and windfall groups in the two experiments.

The trial-level analyses identified some statistically significant interactions between the game-level predictors and our monetary conditions. In Experiment 1, the effect of losing streak length on spin initiation latency in the cash group was abolished in the voucher group. This is to say, the voucher group did not show the accumulative speeding effect on a sequence of losses. In Experiment 2, the effect of win magnitude to lengthen the spin initiation latency (i.e. the post-reinforcement pause effect) was attenuated in the earned group. In both cases, these interactions were not robust across the two experiments. Without *a priori* hypotheses linking the game-level predictors to the pain of paying framework, we are cautious about the interpretation of these effects. We also acknowledge that by analyzing Experiments 1 and 2 separately, we have not statistically compared these terms. Future research may consider looking to replicate these preliminary effects using pre-registered designs.

In Experiment 1, we observed two further effects on bet size in the cash group that were not replicated in the windfall group of Experiment 2. In the cash group, bet size decreased as a function of losing streak length. Losing streak length also represents an increasing distance from the gambler’s last win; this could elicit either pessimism or optimism (via a gambler’s fallacy effect) about one’s chances of winning. The reduced bet size implies the former, in line with a

‘cold-hand’ effect (Croson and Sundali 2005). Bet size also increased as a function of Machine Balance in Experiment 1: gamblers tended to bet higher when they were more ‘in the black’, and this supports the ‘house-money’ effect that was also seen for the win magnitude predictor across both experiments. For the analyses of machine balance, the negative expectancy of the slot machine dictated that most participants spent much of their sessions below their starting balance (‘in the red’). This range restriction, alongside the smaller sample size in Experiment 2, may have compromised our ability to test (and confirm) the Machine Balance effect in Experiment 2.

### **Methodological considerations**

One interpretation of the lack of evidence for monetary effects in our session-level analyses is clearly that changes in monetary format are not associated with changes in risky or uncontrolled gambling. This account may appeal to stakeholder groups keen to promote the adoption of digital payment methods. The traditional forms of evidence for ‘pain of paying’ observed in consumer research ten years ago may also have attenuated, as the population adapts to cashless alternatives. Our own view is that our findings also highlight the methodological challenges with manipulating monetary factors in the laboratory, especially in the context of endowed funds (Gainsbury and Blaszczynski 2011). Although our participants were experienced gamblers, they were not playing with their own money. Our procedure included a number of elements intended to reinforce our monetary manipulations (e.g. a realistic in-house ‘voucher’, and asking participants to count and hold the bills), but it is possible that these features were unsuccessful. If participants continued to construe the endowment as a windfall across all conditions, any ‘pain of paying’ effects may be negligible. Similarly, our earning manipulation in Expt 2 was contrived in so far as it was an unavoidable component of our procedure; participants could not decide to ‘not work’ (other than by withdrawing from the study), nor can we be sure our earning task successfully fostered a sense of ownership. Clearly, reimbursement procedures carry ethical considerations that are especially important in gambling research (Cantinotti et al. 2016), but we suggest there is nonetheless scope for methodological refinement here, such as borrowing procedures from behavioral economics (Ercal et al. 2011; Rüdiger et al. 2017) or examining windfalls during the gambling game itself (Rockloff et al. 2020).

In our experiments, the sensitivity of our designs was also affected by the variability associated with using authentic slot machines. While the games afford ecological validity, the outcome sequence cannot be controlled, and we see substantial within-condition variability in profit/loss (machine balance) and the ensuing subjective experience of our participants (e.g. elation, frustration). This variability was further amplified by our decision to allow participants to vary their bets, which we took in order to derive more direct measures of risk-taking (see [Supplementary S2](#)). In future studies, the use of realistic simulators to present a controlled sequence

could reduce this variability, although it is impossible to fully eliminate some outcome variability if participants are allowed to vary their betting strategies.

Our findings should be considered in light of a number of further strengths and weaknesses. First, although we pre-registered the hypotheses for Experiment 2, behavioral data from authentic slot machines are complex, and some deviations were necessary from the pre-registered plan (see [Supplementary S4](#)). With the richness of the data, precise operationalization of behavioral variables is key: alternative session-level variables may have shown greater sensitivity to monetary factors. In our trial-level analyses, bet size was a binary variable centered on each participant’s average bet, but this variable did not distinguish changes in line style and bet multiplier strategy, which exert somewhat distinct effects on the reinforcement profile (Barr and Durbach 2008). Second, our decision to recruit experienced gamblers traded off against reasonably small group sizes. Although many of our participants scored in the ‘at risk’ range on the PGSI, from our decision to exclude participants scoring 8 or higher, it is possible that our monetary manipulations may exert stronger effects in those with gambling problems. We did not test for moderating effects of PGSI or age, which would be worthwhile in larger samples. We did not collect data on income or socioeconomic status, which could moderate the impact of financial factors and ‘wealth shocks’. Lastly, some minor procedural differences existed between Experiments 1 and 2; for example, the slot machine cash/credit display in Experiment 1 was congruent with the cash/voucher condition, but was not systematically controlled in Experiment 2, which could have contributed to some inconsistent findings between the two studies.

Collectively, these findings highlight the challenges that face policy-oriented research on the impact of monetary formats on gambling behavior. Despite our design gaining external validity from the use of both authentic gambling products and experienced slot machine gamblers (the ‘real gamblers, real games’ requirement for evaluations of responsible gambling tools by Ladouceur et al. 2017), there are methodological barriers to examining the psychological impacts of financial factors in the laboratory. Given jurisdictional differences in EGM specifications and the logistical challenges with community-based recruitment, future research could benefit from pooling data collection across multiple labs. Improved access to field data (e.g. gambling operators) will also aid policy-related decisions around cashless gambling. Although constraints also apply in the field – for example, there is no ‘cash’ option on a gambling website – better understanding of financial influences on gambling will likely require convergent data including both controlled laboratory designs and ecologically-valid field research.

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# MAVERICK

G A M I N G

Washington Table Ticket - In, Ticket - Out (TITO) Proposal  
Jan 7, 2022



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DESCRIPTION

# OVERVIEW

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THE WHY







# Objective of Table Game Ticket - In, Ticket - Out (TITO)

## OVERVIEW:

Maverick Gaming proposes the ability to use barcoded tickets to buy in chips at the gaming tables, to issue barcoded tickets against chips, and to cash out barcoded tickets at a kiosk and cage.

## THE OBJECTIVE:

- ✓ Implement a new product at all locations that will eliminate the passing of counterfeit bills.
- ✓ Provide a control that will reduce the ability to launder money.
- ✓ Use of a secure bill validator stacker box to keep cash inserted into the bill acceptor protected.
- ✓ Provide full auditing of transactions at the tables.
- ✓ Eliminate guests carrying chips to cage for cash out and avoid guests walk out with chips.
- ✓ Improve operation efficiency to reduce frequency of fills and drops.

## THE SOLUTION

- The TITO device's secure bulk bill validator has a built-in counterfeit device that can scan multiple bills at once, detect any counterfeit bills and reject them.
- Enhance AML capability on unrated guests.
- Increase in security through funds stored stacked in TITO cash boxes.

# VIDEO DEMONSTRATION

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# CountR

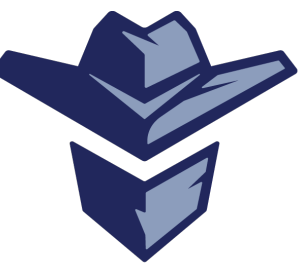
[Click HERE](#) if above demo video not playing

# TRANSACTION FLOW DESCRIPTION

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Proposed

# 3



# Transaction Flow Description

## Buy - In:

- When a player purchases chips with cash to a gaming table, the dealer stacks the bills into the TITO device for validation.
- The TITO device then validates the bills and rejects counterfeits. If the bills are validated, the dealer then issues the corresponding value in gaming chips to the player purchasing chips with cash.

## Ticket - In:

- When a player comes to a gaming table and presents a TITO barcoded ticket to the dealer, the dealer scans the ticket into the TITO device by way of the embedded barcode scanner.
- The TITO device then reads information from the ticket and then transmits this information to the Casino TITO system.
- The TITO system then validates the ticket. If the ticket is validated, the dealer then issues the corresponding value of the ticket in gaming chips to the person presenting the ticket.
- Gaming play then begins with the issued chips. If the ticket is not validated by the casino's TITO system, no chips will be issued to the person presenting the ticket.

## Ticket - Out:

- When a player has concluded wagering at the table, the dealer will then collect the players remaining chips, count them and then enter the value of the chips into TITO device via the 12 key keypad.
- After entering the value into TITO, a ticket will be printed via the internal TITO printer after validating the transaction through the TITO system.
- The motorized printer internal to TITO device will present a ticket to the dealer who will then present the ticket to the player.

## Ticket Redemption at Kiosk :

- TITO tickets can be accepted by a kiosk, when the voucher has been validated by the TITO system, currency is paid to the player.

## Anti - Money Laundering (AML) Risks:

- The AML Program will be revised to account for the risks related to the TITO redemption and issuance process.
- The TITO process provides better information regarding a player's activity in that it tracks the transactions and will facilitate reporting.
- Cash activity is minimalized.
- The TITO system and kiosks are configurable to require identification and information or prohibit specific cash transactions.



**MAVERICK**  
SPORTS

**THANK YOU**

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Add Contact Info Here

C. Sizemore:

Okay. Thanks. I just don't even play a lawyer on TV, so I like to check in on some of those things. So, thank you. So with that, we are done with that tab and we will now move and I need to find my agenda. Sorry, everyone. The next item up for discussion under tab seven is a petition for rule change. Rule petition to amend, and the topic is use of an iDrop kiosk. We have Ashley [Laden 01:46:29] back. Welcome back, Ashley. And again, I believe Mr. Merrill is the petitioner. So Ashley, go ahead.

Ashley Laden:

Sure. Sizemore, commissioners and, ex officios, for the record, I'm Ashley Laden rules coordinator with the Gambling Commission. Tim Merrill of Maverick Gaming in Kirkland, Washington is proposing to amend a number of rules to allow for the use of a ticket-in, ticket-out system using the iDrop kiosk device in card rooms to purchase and redeem tickets for table games play. According to the petitioner, iDrop enables players to purchase chips directly at the live gaming table from the dealer and brings ticket-in, ticket-out to live gaming tables, thus allowing players to move directly from live game to live game without having to go to the cage cashier. Players are able to cash out at any time on the live gaming table and receive their money and ticket form paid by the iDrop kiosk. The iDrop bill acceptor system allows for easy accounting and verification of all cash in and out at each live gaming table.

Ashley Laden:

Transaction history can be viewed in real time in the event that a customer dispute arises and decreases the threat of counterfeit bills because every bill is verified using the iDrop bill acceptor. The petitioner also feels that manipulation in the count room would become impossible. The petitioner feels this change is needed because this change would allow card rooms the ability to validate and count the drop on live table games, using real time data for efficient reporting of revenue. The petitioner feels there will be an increase in security because the funds will always be in secure boxes. The use of tickets will allow for a quick and secure count by having tickets to validate from data already collected at the table games. Lastly, the petitioner feels this will help combat the passing of counterfeit bills by using the ticket-in, ticket-out device, on the table games to validate all bills for authenticity.

Ashley Laden:

The petitioner feels the effect of this rule change would allow the use of tickets and kiosk systems instead of only allowing the purchase of chips using cash and the redemption of chips at the cage. If the petition is accepted, card room and manufacturer rules will need to be amended and additional rules may need to be adopted. Staff has the following policy concerns with this petition. While this equipment could reduce criminal behavior such as the passing of counterfeit bills and theft, staff is unsure how the use of iDrop will impact any anti-money laundering efforts. I shouldn't say any. Impact anti-money laundering efforts.

Ashley Laden:

Staff has concerns about the ability to maintain a closed system. Other impacts or changes. The use of this equipment could bring to the card room operation, such as count room procedures, accounting elimination of the cage, et cetera. The security and integrity of equipment and connectivity of the card rooms' accounting systems. Under the requirements of the Administrative Procedure Act, the commission must take action on this petition within 60 days of receiving it. Your options are to accept the petition and initiate rulemaking proceedings by filing the rules proposed for further discussion or to

deny the petition in writing stating the reasons for denial or where appropriate indicate alternative means by which the agency will address concerns raised in the petition.

Ashley Laden:

Staff recommends, accepting this petition and initiate rulemaking while understanding that the equipment proposed will need to be submitted and evaluated by Gambling Commission staff under WAC 230-17-192, submission of electronic or mechanical gambling equipment, during the rulemaking process before staff can begin to finalize rules related to this petition. And with that, I'll now turn it over to Mr. Merrill of Maverick Gaming to speak to his petition. And he's got a presentation that I will show as well.

C. Sizemore:

Okay. Welcome back, Mr. Merrill.

Tim Merrill:

Thank you.

Ashley Laden:

Okay.

Tim Merrill:

We can just skip to the overview. One More.

Ashley Laden:

Okay.

Tim Merrill:

All right. So what we're trying to do is bring the ticket-in, ticket-out technology used on slot machines to the table games. The objective is to implement a new product in all locations. It's going to eliminate passing counterfeit bills, provide a control that's going to reduce the ability for people to launder money. In this system, you're able to actually track the ticket associated with the card number and then, therefore, their play also on the tables. The use of the secure validator stacker box keeps the cash inserted in the bill acceptor protected. We can fully audit the transactions at all the tables. It eliminates guests carrying chips to the cage and avoids guests walking out with chips.

Tim Merrill:

It also improves our operational efficiency, because it allows us to reduce the number of fills and credits we do at the tables, because we're always collecting the chips back. The other thing that we didn't put in here, but it happens is we unfortunately in the card room business, get robbed once in a while. What this is going to do, because we're able to use kiosks to allow people to cash out, it reduces the amount of cage cash we have. So, therefore, we're less desirable for armed robbery. If you want to go to, we got a little demo from the supplier on how it works. It's only a couple minutes. We thought we could show you the video.

Ashley Laden:



Give me just a second and I've got that ready here.

Reeves:

Ashley, is there sound to this or is it just a video?

Tim Merrill:

It's just a video. The supplier didn't have sound. So you see, they take the money in. It validates it in the bill validator and then they give the checks to the customer, the chips. So then when the customer's ready to cash out, again, you validate. You validate the amount, you type it in. There we go. In real life it'll go faster than that. And it prints a ticket directly from the tray that is then given to the customer. Last is the redemption at the table. Ticket goes just directly back into the BV. In this case, it tells the dealer what was redeemed and you give the chips to the customer.

Tim Merrill:

So we just took a minute to summarize the transaction flow. It would be buy in, that's when they take cash to the dealer. Same processes that are already approved in the state would be used that then verify that cash amount, cut the chips out, the cash would then go into the BV. It would be authenticated to go in as a secondary measure. And then we would then hand the chips off to the customer. Ticket-in is the same way, except this time they're going from table A to table B with a ticket that they've cashed out. They put the ticket into the BV. It will tell the dealer how much to give the customer. Dealer cuts that out and gives it to the customer. Ticket out is when they want to cash out. So they've played, they have chips. They want to go to another table.

Tim Merrill:

They turn their chips in, the dealer puts in. After the amount is verified, the dealer puts that into the kiosk. It prints the ticket out. And then there's a ticket to redemption kiosk. That's where we're hoping a majority of the transactions occur when the customer wants to cash out, where they just go to a kiosk, they put their ticket in and then it cashes out. And then obviously there are, as brought up by staff, some people would think about anti-money laundering. Actually the AML program takes this into account. So, it tracks the buy-in, ticket-in and ticket-out of every customer during the day.

Tim Merrill:

When it hits reportable thresholds for a known customer, it records those amounts. If a CTR needs to be completed on a customer, then when they go to the kiosks to cash out that CTR is completed in the back end, using the same systems we have today. And then the TITO system and the kiosks are configured that a certain level is required, identification is required on unknown customers. And with that identification is not received and those transactions are not processed. I think that is my presentation.

C. Sizemore:

Okay, great. Commission Reeves, I see your hand.

Reeves:

Thank you, Mr. Chair. So similar to my last question and Mr. Merrill, if you know the answer to this, feel free to chime in. But for staff, is this type of service offered anywhere else in the gambling system in Washington? And if so, can you highlight where? And if not, similar to the last instance, initiating

rulemaking here would be essentially creating a dialogue to talk about a pilot. Kind of a pilot exploration of this particular activity. Is that correct?

Tina:

Correct. Tina Griffin, interim director. So this is not authorized in commercial nonprofit or tribal gaming facilities. Ticket-in, ticket-out is authorized for tribal lottery systems, but nothing is authorized in the state of Washington for table games.

Reeves:

So again, this would be essentially a potential pilot to understand all of the opportunities, challenges, pros, cons, et cetera. That's what staff would be exploring in the rulemaking process, correct?

Tina:

Yes. Thank you. Sorry, I missed the last part of the question and answering the last part of the question. So, yes. So one of our rules, 230-17, my apologies for not having it in front of me.

Ashley Laden:

192.

Tina:

Thank you, Ashley. So, 230-17-192 states that when there is rulemaking that would involve equipment that we have to receive that equipment so we have an opportunity to truly understand what is being proposed and to find out how it works, et cetera. And so that we can make sure that during rulemaking, we outline the parameters of how that equipment's going to be used. So we did this exact same process just recently through the electronic raffle, 50/50 nonprofit raffle systems. And so during that process, we review the equipment and make sure that we're capturing everything that we need to through the initial set of rulemaking. And then we also obviously are making sure that the equipment is within the confines that could be within our scope of authority in rulemaking, right? And so, if the equipment does something that would need to have a legislative change, then we have that conversation, et cetera. So, yes, that's correct.

Reeves:

Perfect. Thank you, director. That answers both my questions.

Tina:

Thank you.

C. Sizemore:

Thank you, Tina. Any further questions, discussion here prior to public comment? All right. I'm not seeing any other commissioners raise... Oh, commissioner Reeves.

Reeves:

Sorry. And so, I just want to make sure that I heard Mr. Merrill correctly. Mr. Merrill, your articulation is that initiating this particular activity on the premises of your facilities, that you see this as a safety and security measure as well. Is that an accurate assessment of what you're articulating?

Tim Merrill:

That's correct.

Reeves:

Okay. Thank you very much.

C. Sizemore:

All right. So with that, we will go ahead and open the floor up for public comment. So if you wish to make public comment on this iDrop concept rulemaking, now would be the time. And again, we'll use the functionality of the Teams and I am not seeing any hands. Julie Anderson, are you seeing anyone?

Julie Anderson:

No, sir. Nothing in the chat.

C. Sizemore:

Okay. Oh, commissioner Reeves. Well, I'll go ahead and close public comment and open... Well, commissioner Reeves, go ahead. And then we'll be open for a motion.

Reeves:

Yep. I was just getting in line, sir.

C. Sizemore:

All right. Floor's yours.

Reeves:

Great. Mr. Chair, I would like to recommend that we accept this petition and file initial rule making with the understanding that obviously as director Griffin, interim director, Griffin, articulated that the equipment being discussed in this particular petition needs to be submitted and evaluated by the commission staff pursuant to WAC 230-17-192, before we can begin to finalize any rulemaking beyond the initial 101.

C. Sizemore:

All right. So I believe that your motion is to initiate this rulemaking proceedings as proposed by staff for further discussion. Is there a second?

Levy:

Commissioner Levy will second.

C. Sizemore:

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Okay. It's been moved by commissioner Reeve, seconded by commissioner Levy to initiate rulemaking proceedings as proposed by staff for further discussion. Is there any further commission discussion? All right. Hearing none, we will attempt a voice vote. All those in favor, please say aye.

Reeves:

Aye.

Levy:

Aye.

Tina:

Aye.

C. Sizemore:

Aye. Any opposed? Motion carries four to zero. All right. I believe that we're done with you, Mr. Merrill. Is that accurate?

Tim Merrill:

Thank you for your time today, commissioners.