Summary Report

The Focal ALeRT Affordability Index: Finding Overspenders Among Regular EGM Gamblers

January 2022

The Invisible At-risk Player – Identifying customers spending beyond affordable limits.

1.0 Overview

Regulators recognize that some gamblers spend more money than they can afford while gambling, leading to negative consequences, including the use of misappropriated funds to finance the activity. Identifying these customers has become a priority for operators but poses several challenges as affordable limits vary strongly between players. The use of rule-based thresholds for triggering action, such as amount spent, are very inefficient in finding the right people; if set too low most of those reaching a certain spending threshold will not be in the target group, if set too high, then most of those in the target group will be missed. As a result, such broad approaches are ineffective in reaching or producing improved outcomes for players most likely to be overspending. To address the gap and supplement operator host responsibility efforts, in 2015, Focal Research Consultants Limited initiated original research to develop algorithms designed to find those most likely to be spending beyond affordable limits. Risk detection is based on player behaviour and play decisions regardless of the absolute amount of money spent. Focal developed a new Affordability construct for the FocaL Adult Gambling Screen (FLAGS), a seven-item scale to identify those players most likely to be spending beyond their means and to be obtaining cash to do so in non-traditional ways. During testing, the new scale was administered to over 10,000 regular EGM players from three different countries (UK, AU, NZ) representing 8 different operators and over 300 venues. Using these datasets, Focal developed effective algorithms and profiles for accurately detecting and assisting at-risk 'Overspenders'. These customers pose unique risk to communities and operators and would otherwise be invisible to operators when using rule-based or other methods of detection.

Key Findings:

1. Focal has developed a valid and reliable Affordability Index to identify those regular electronic gambling machine players (EGM Gamblers) (i.e., playing slots, EGMs, and electronic roulette at least once a month or more) who are most likely to be spending beyond their means (i.e., Overspenders).
2. 'Overspenders' comprise about 5% of the regular EGM player base suggesting about one in every 20 regular EGM players is at-risk for spending beyond affordable limits.
3. About one in three Problem Gamblers (PGSI=8+) also score as Overspenders (34.7%) using the Focal Affordability Index; not all Problem Gamblers are spending beyond their means yet almost all customers identified as Overspenders (92%) were found to score at high-risk for problem gambling making this a priority target group for prevention and harm reduction.
4. The path to overspending is very distinctive for this player group in terms of inappropriate gambling beliefs and motives for playing, risky play behaviours, obsession with gambling, and experiencing negative consequences. Knowing the cause and effects helps inform talking points during customer interactions and supports the development of best practices for assisting these players.
5. Overspenders were found to have limited resources with which to gamble consequently, the extent and intensity of gambling are often considerably less than other at-risk gamblers even when compared to other regular gamblers. The primary exception is the amount spent per wager which exceeds the amounts observed for both comparison groups. It is assumed that Overspenders' obsession with gambling leads to this distinctive in-session behaviour.
6. On average, these players spend less than other at-risk EGM gamblers but that does not mean they can be ignored. Due to a lack of resources and fuelled by an obsession with gambling and risky gambling motives, they are more likely to suffer negative consequences (e.g., financial, relationship and work-related). In some cases, lower expenditure may be reflective of depleted resources which may contribute to use of non-traditional funding sources to finance continued gambling.
7. Overspenders exhibit few extreme behaviours that distinguish them from other regular gamblers; current cues used to identify at-risk gamblers on the floor such as length of session, will not flag these customers for attention. Algorithms identifying Overspenders using their play behaviour data is likely to be the most effective way to detect risky play patterns for these more 'invisible' at-risk customers most likely to be spending beyond affordable limits.

Focal Research has successfully developed algorithms using the new FLAGS Affordability Index. Such models are currently deployed in the field to accommodate changes in play behaviour due to COVID-19. Refer to the Technical Report for additional information.

2.0 Introduction

In the following summary paper, we describe the development and testing of the Focal Affordability Index.

The goal of the research was to address the following issues:

1. How prevalent is the acquisition of resources from non-traditional sources among regular gamblers on electronic gambling machines?
2. How many at-risk and problem gamblers are obtaining resources from non-traditional sources?
3. What are the antecedents to obtaining resources from other sources? What beliefs, motives and behaviours lead to overspending? What is their state of mind in terms of impaired control and obsession with gambling? What negative consequences occur because of overspending?
4. What is their characteristic play behaviour compared to regular players and compared to other at-risk gamblers? What are the ramifications of these differences for identifying these players using algorithms and based on their behaviour on the floor?

For Additional Information, refer to the Technical Report and visit www.focalalert.com to access publications and papers.

3.0 Development process

3.1 Statement Creation

In 2015, Focal created a seven statement Affordability Index designed to capture behaviours associated with spending beyond a player's means. The statements were added as new construct to the FocaL Adult Gambling Screen (FLAGS) [123]. Based on actual

[1] Schellinck, T., Schrans, T., Bliemel. M., Schellinck, H., & Ontario Ministry of Health and Long-Term Care (2011b). Raising The FLAGS: A Pilot Study Adapting FLAGS, A Next-Generation Gambling Risk Assessment Instrument, For Use in Identifying Risk Among General Gambling.

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[2] Schellinck, T., Schrans, T. , Bliemel, M., & Schellinck, H. M. (2015a). Construct Development for the FocaL Adult Gambling Screen for Electronic Gambling Machine players (FLAGS-EGM): A Measurement Instrument for Risk due to Gambling Harm and Problem Gambling Associated with Electronic Gambling Machines. Journal of Gambling Issues, 140–173.

[3] Schellinck, T., & Schrans, T., Bliemel, M., & Schellinck, H. M. (2015b). Instrument Development for the FocaL Adult Gambling Screen (FLAGS-EGM): A Measurement of Risk and Problem Gambling Associated with Electronic Gambling Machines. Journal of Gambling Issues, 140–173.

reported behaviours these statements more accurately capture a player's situation in terms of gambling resources.

The first five statements explore the degree to which a player has used non-traditional channels to obtain resources. The statements were designed to be non-threatening and performed well in testing.

Statements six and seven identify the negative consequences of obtaining such resources to gamble with at the EGM.

Focal ALeRT Affordability Index Statements

1. I often play [on the machines] with money I have borrowed from other sources.
2. I often play [on the machines] using money meant for other purposes.
3. I have found ways to get money so I could continue to play [on the machines].
4. I have played [on the machines] using money that did not belong to me.
5. I have borrowed money from others without them knowing so I could continue to play [on the machines].
6. Sometimes I am not able to pay back money I borrowed to play [on the machines].
7. I have done things that may not be legal because of my gambling [on the machines].

3.2 Data Collection

The statements were administered as an online survey in accordance with international research standards in 2016 and 2019 in the United Kingdom, New Zealand, and Australia. Participation was restricted to those member customers at a specific gambling venue who had played electronic gambling machines using their card on six or more days in the last year and who could be contacted by email. Electronic gambling machines included slots, electronic gambling machines, and electronic roulette, so for simplicity's sake, we refer to those who regularly play these machines as EGM gamblers. Respondents were offered a low-value voucher to complete each of two sections of the survey. Part A was comprised of the nine-item Problem Gambling Severity Index (PGSI)[4]. Part B included the FocaL Adult Gambling Screen (FLAGS), which was comprised of 61 yes/no statements, as well as the seven affordability statements. On average, 94% of respondents opted to complete both parts of the survey. The response rate for Part B FLAGS survey and the Affordability items ranged from 10.2% to 42.6%, with an overall average of 16.7%.

[4] Ferris, J., & Wynne, H. (2001). The Canadian problem gambling index: Final report. Ottawa, ON: Canadian Centre on Substance Abuse.

A total of 10,861 surveys were completed where the respondent answered the seven Affordability questions. Cleaning the data yielded a working sample of 10,304. If the respondent disagreed with a particular Affordability statement, was uncertain, or refused to answer the question, they were coded zero. If the respondent agreed with the statement, it was coded as one. This approach allowed us to calculate an Affordability score for each respondent by summing the number of statements endorsed, even if a respondent did not answer one or more of the scored items questions.

Table 1 presents the response frequencies for the statements included in the Affordability Index. Refusal and Don't Know rates were low for these statements and the percentage of "Yes" responses was large enough to permit detailed analysis.

Table1 Response to Affordability Index Statements (n = 10,304)

STATEMENT	Yes	No	Unsure*
I often play [on the machines] with money I have borrowed from other sources.	4.8%	94.6%	0.7%
I often play [on the machines] using money meant for other purposes.	11.1%	87.4%	1.5%
I have found ways to get money so I could continue to [play on the machines.	7.6%	90.8%	1.6%
I have played [on the machines] using money that did not belong to me.	4.2%	95.0%	0.8%
I have borrowed money from others without them knowing so I could continue to [play the machines] [at the venue].	3.3%	96.1%	0.7%
Sometimes I am not able to pay back money I borrowed to [play the machines].	3.9%	95.0%	1.1%
I have done things that may not be legal because of my [machine] gambling	1.9%	97.2%	0.9%

** Don't Know or Refused*

3.3 Statement Analysis

Factor analysis showed that the Affordability Index statements formed the same single construct in each of the six samples in three countries, indicating the index was valid in vastly different markets, regulatory jurisdictions, and over time. Confirmatory factor analysis also confirmed construct validity using the combined sample of 10,304 respondents. The index passed several additional validity and reliability tests. (See the Technical Report for additional information)

3.4 Affordability Indicator Profile

Figure 1 & Table 2 below show the percent of players who scored 8+ on the PGSI based on their score on the Affordability Index.

Figure 1 Percent of Players Who Scored 8+ on the PGSI According to Their Score on the Affordability Index (n=10,304)

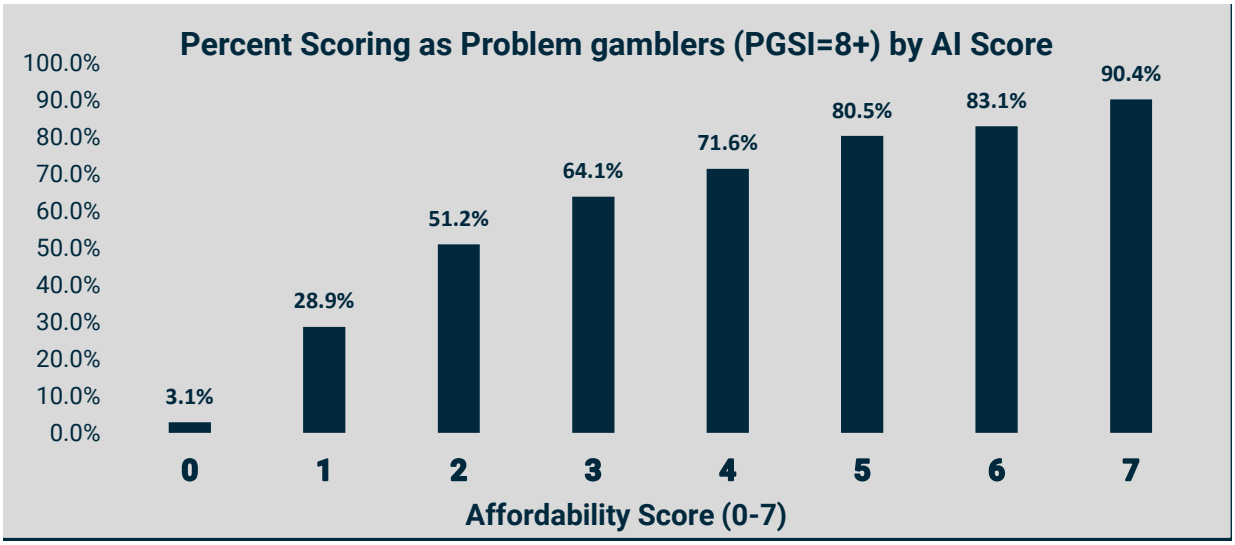

Table 2: Percent of Players Who Scored 8+ on the PGSI According to Their Score on the Affordability Index (n=10,304)

Affordability Index Score	0	1	2	3	4	5	6	7
Pct PGSI 8+	3.1%	28.9%	51.2%	64.1%	71.6%	80.5%	83.1%	90.4%

Based on their Affordability scores we divided the players into three customer segments.

Table 3: Description of Overspender Segments (n=10,304)

Overspender Segments	Description	Affordability Score	% of Regular EGM Players
Diverters	*I often play [on the machines] using money meant for other purposes*	1-2	11.7%
Finders	*I have found ways to get money so I could continue to play [on the machines]*	3-4	2.9%
Borrowers	I have played [on the machines] using money that did not belong to me	5-7	1.9%
Total	***Endorsement of any item***	**1-7**	**16.5%**

Table 4: Percent Endorsing Each Affordability Statement by Overspender Segment (n=1706)

Affordability Construct Statements	Diverters Segment (AI=1-2) n = 1207	Finders Segment (AI=3-4) n = 300	Borrowers Segment (AI=5-7) n = 199
I often play [on the machines] with money I have borrowed from other sources.	12.4%	56.0%	86.9%
I often play [on the machines] using money meant for other purposes.	59.5%	79.6%	94.5%
I have found ways to get money so I could continue to play [on the machines].	35.2%	59.9%	88.9%
I have played [on the machines] using money that did not belong to me.	9.0%	45.3%	92.3%
I have borrowed money from others without them knowing so I could continue to play [on the machines].	3.4%	38.7%	88.4%
Sometimes I am not able to pay back money I borrowed to play [on the machines].	7.4%	45.1%	89.7%
I have done things that may not be legal because of my gambling [on the machines].	3.8%	17.1%	50.8%

3.5 Defining Overspenders

To select targets for the development of the algorithms and, therefore, to select those players who would be targeted for interaction by casino staff, we defined 'Overspenders' as those players scoring 3+ on the Affordability Index.

The majority of those who score 3+ on the Affordability Index, also scored 8+ on the PGSI scale, indicating a high proportion of Overspenders (64% to 90%) are problem or high-risk gamblers (See Figure 1).

The Overspender segment includes players scoring in the Finders and Borrowers AI groups. We include 'Finders' in the Overspender segment as 80% of these customers divert funds to gamble (i.e., use money meant for other purposes); 60% find new sources to fund their gambling and many use funds that may not belong to them (39% to 45%). They are also likely to be experiencing negative consequences as 45% have sometimes been unable to pay back money borrowed to play EGMs.

We collectively refer to those who have an indication of overspending (3+ on the Affordability Index) as Overspenders.

- Overspenders make up 4.8% of our sample of regular EGM gamblers.
- 34.7% of Problem Gamblers (PGSI=8+) also scored as Overspenders in our total sample.
- Only 6.2% of High-Risk Gamblers (PGSI=5-7) are Overspenders and Overspenders make up a negligible part of the remaining PGSI risk segments.
- 73.7% of Overspenders scored 8 or higher on the PGSI and another 18.0% are High-Risk (PGSI 5 – 7).
- This means 91.7% of Overspenders in our sample also scored as Problem or High-Risk gamblers.

3.6 Causes of Overspending

Structural Equation Path analysis was used to assess the influence of the ten FLAGS constructs and statements on the probability of a player being categorized as an Overspender.

The resulting path to overspending is clear and summarized below.

- **Early Big Wins & Risky Beliefs.** The majority of Overspenders had a big win when they first started to gamble. This may be why they believe that gambling is an easy way to get extra money when they need it. They are more likely to believe that someone who has been gambling and losing for a while should keep playing so they do not miss out on the chance to win back their money. They, therefore, believe they can come out ahead when they need money, and they believe the gambler's fallacy.

- **Risky Motivations.** Due to holding these beliefs, Overspenders are 6.7 times more likely than other regular players to gamble when they *want money*. Most of them will do so even if *they do not have much money*, hoping to get a big win. This means they gamble to get cash to continue gambling or to pay bills.

- **Early Risky Behaviours.** As a result, almost all Overspenders usually exceed the amount of money they intended to spend, and they often had trouble stopping/quitting play when they were ahead. This accelerates the rate at which they are losing money, further fueling their need for resources to gamble and to pay back debts.

- **Impaired Control.** Over 60% admit they have tried unsuccessfully to stop or reduce their gambling. This means many may be amenable to assistance in gaining control of their gambling.

- **Later Risky Behaviours.** They often gamble in an irresponsible manner. They chase losses more often, divert funds meant for other purposes, use credit to keep gambling when they run out of cash, borrow funds from others, and they are 11.9 times more likely than other regular EGM Gamblers to gamble while at work.
- **Obsessed.** Most distinctly, over half are *obsessed* with gambling and say they spend a lot of their time thinking about gambling or *how to get money* to gamble.
- **Harms.** Many are already experiencing negative consequences. Compared to other regular EGM Gamblers they are 27.3 times more likely to say their gambling has almost always or always caused financial problems for them or their household, their gambling caused them to have a falling out with people they used to hang out with, and they are 26.8 times more likely to say their performance at work was negatively affected by their gambling.

3.7 Play Behaviours of Overspenders

Using two years of play behaviour data for each respondent, we were able to compare the play patterns of Overspenders (n=438 - 476) to other regular EGM Gamblers who do not have an indication of overspending (n = 8813 – 9504). (See Table 5 below).

Overspenders take greater risks when gambling, wagering substantially more per spin. However, perhaps due to a lack of resources, on average, they play slower than other players.

Despite slower play, they have higher turnover per session, leading to greater losses during a play session when compared to other EGM Gamblers.

In contrast to other EGM Gamblers, Overspenders are less likely to exhibit distinctive behaviours that are observable on the floor. Specifically, they spend less time on the machines during a session and spend less time playing on the machines over the year than other regular EGM Gamblers, with no significant differences observed for the number of sessions played per year or overall annual losses.

The only distinctive difference that might help identify Overspenders visually is that they may be more likely to have sessions that last past midnight.

Table 5: Gambling Behaviours of Overspenders Compared to Other Regular EGM Gamblers

Play Behaviour	% Difference	Sign. (two-sided)
Total Number of Yearly Spins	-14.2%*	0.068
Total play hours Over the Year	-19.3%**	0.021
Total Weekend Play Hours	-29.2%***	0.001
Number of Overnight Sessions	+13.8%	0.178
Number of Yearly Sessions	-7.1%	0.189
Length of a Session	-9.2%**	0.036
Turnover per Spin	+40.1%**	0.004
Spins per Hour	-8.6%**	0.034
Turnover per Hour	+9.0%	NS
Turnover per Session	+15.6%**	0.028
Losses per Session	+14.9%	0.178
Yearly Losses	+9.0%	NS

*(*** p ≤ .001; ** p ≤ .05; * p ≤ .10; p ≤ .20; NS = Not Significant – p>.20)*

While is it is reasonable that Overspenders differ from other EGM players it is also of interest to compare Overspenders identified by the Affordability Index to high-risk EGM players as identified by the PGSI (Score = 5+).

When Overspenders (n=438-476) are compared to other at-risk EGM Gamblers (n = 2361 – 2557), they are much less active and, except for their level of wagering per spin, on average do not exhibit extreme behaviours that would lead to their identification on the floor. (See Table 6 below)

In fact, using the cues of high-risk gamblers for identification means that Overspenders are unlikely to be detected even though 92% of these Overspenders score as Problem Gamblers.

Table 6: Compared to Other Regular EGM Gamblers who Score 5+ on the PGSI.

Play Behaviour	% Difference	Sign. (two-sided)
Total Number of Yearly Spins	-44.5%***	0.000
Total play hours Over the Year	-36.0%***	0.000
Total Weekend Play Hours	-43.5%***	0.000
Number of Overnight Sessions	-18.5%*	0.109
Number of Yearly Sessions	-20.3%***	0.001
Length of a Session	-17.8%***	0.001
Turnover per Spin	+30.0%**	0.041
Spins per Hour	-7.5%**	0.044
Turnover per Hour	-2.1%	NS
Turnover per Session	-19.7%**	0.022
Losses per Session	-27.2%**	0.028
Yearly Losses	-42.4%**	0.004

*(*** p ≤ .001; ** p ≤ .05; * p ≤ .10; p ≤ .20; NS = Not Significant – p>.20)*

4.0 Overview and Discussion

In our research, we found that about 17% of regular EGM customers endorsed any one of the seven statements comprising the Affordability Index. Most of these regular EGM Gamblers (12%) were characterised as 'Diverters' insofar as they mainly divert funds from other sources to gamble. This is not a strong indication of overspending as people constantly make choices of how to allocate their money, especially for recreational or entertainment purposes. However, many of these EGM Gamblers may be on the verge of overspending, especially if resources are being diverted from essential items to gambling.

For the remaining 5% of regular EGM customers falling into the 'Finder' and 'Borrower' segments, overspending was associated with more risk and negative outcomes.

Approximately 3% of regular EGM players were characterized as actively looking to secure extra, additional resources to continue to gamble (Finders), behaviour indicative of spending beyond affordable limits. There is an additional 2% of EGM Gamblers who have wagered with borrowed funds or money that does not belong to them (misappropriated funds), a definitive sign of overspending. The Finder and Borrower segments were added together to create the Overspenders group as these players were found to be using money from non-traditional sources to fund their gambling.

It is important to note that not all Problem Gamblers have indications of overspending. Only 35% of problem gamblers in our sample also scored as Overspenders. However, 92% of Overspenders are either Problem (74%) or High-Risk gamblers (18%), making this an important sub-segment of at-risk customers for targeted attention.

Compared to other regular EGM Gamblers, the behaviour of Overspenders differed and tended to be consistent with a person who is obsessed with gambling but has limited or diminished resources for supporting their obsession. Yet, play patterns for this high-risk customer group were not distinctive or extreme enough to make them easily observable or stand out on the floor. Moreover, in some cases, they may even be playing in such a way as to minimize their visibility.

As a result, risk detection algorithms offer a valuable tool to operators in finding this largely invisible player group that poses an elevated risk for the community and business due to the use of non-traditional sources for funding their gambling.

Compared to other at-risk EGM Gamblers they are much less active and, except for their level of wagering per spin, do not exhibit observable risky play. In fact, if extreme behaviours are used to trigger customer actions, such as long sessions and large turnover per session, then Overspenders are less likely to be identified, underscoring the value of automated risk detection algorithms in proactively bringing overspending play patterns to the attention of operators for prevention and risk reduction purposes.

Although Overspenders may be wagering at lower levels than most other high-risk players the consequences can be severe; lower expenditure is more often related to lack or depletion of resources, and these customers are far more likely to be suffering negative consequences (financial, relationship and work-related consequences) due to their obsession and inappropriate motives for gambling. Given this profile and their elevated risk for gambling with misappropriated funds, Overspenders are positioned as a priority for identification. This is even more urgent as methods currently used by many operators to identify at-risk gamblers are likely to find very few of these high-risk customers.

An Affordability Model for detecting the play patterns of Overspenders is an important addition to an operator's suite of safer gambling resources. Our assumption is that a key indicator of a lack of resources is the need for a player to obtain cash from non-traditional sources. This may involve diverting existing resources from other items and activities, but even more telling, centers on locating new resources. Often the player is hoping to pay back loans or misappropriated funds with winnings or subsequent earnings, and, in some cases, this may occur until eventually the player is unable to cover the losses. The consequences of waiting until such misuse of funds is detected by others is catastrophic for the player, their family, other community members and the industry more broadly.

An algorithm that effectively identifies those on the floor who are most likely to obtain funds from non-traditional sources and, therefore, are likely to be overspending has several advantages. It does not require the collection of personal financial information or the involvement of financial institutions. The gambler will not be aware they can be identified by their play patterns, and even if they are, they will be unable to determine how to avoid detection. It does not encourage people to go to non-traditional sources of funding and, in fact, may discourage such behaviour as it triggers customer checks. The algorithms also identify those at-risk gamblers who are most likely to experience negative financial consequences due to their gambling behaviours, prioritizing operator attention to those most in need of assistance.

The index is not based on simple behaviours such as long sessions and high spending. The algorithm will fit into existing systems (e.g., ALeRT) already adopted by many gambling operators, a system that staff are already comfortable using. Finally, the Affordability Index does not rely on subjective estimates of affordability but rather identifies behaviours that are strongly associated with overspending and associated negative consequences.

Focal has successfully developed algorithms to identify these players and distinguish them from other at-risk gamblers. This success suggests these players have a distinctive play behaviour that is captured by Focal's inventory of decision-based variables. If operators can identify these people when they are in the early stages of seeking additional resources, they may be able to intervene to prevent consequences from escalating.

Refer to the Technical Report for more information on research results and the development of the Affordability Index algorithm.