

University of Nevada, Las Vegas International Gaming Institute
Responsible Gaming Device Research Report

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University of Nevada, Las Vegas

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Part I: Introduction

Technology and the Problem Gambler

Yesterdays: Technology, Optimism, and Behavioral Change

Sociologically and obviously speaking, ours is hardly the first era to wonder at technology's potential to help us overcome the challenges we face in our lives. At the self-proclaimed "happiest place on earth," this tendency is illustrated by a visit to Disneyland's "Tomorrowland." For many years, one of the rides at Tomorrowland featured a tour through the wondrous kitchens of tomorrow, replete with machines and robots that would dramatically simplify domestic duties from vacuuming to Pop Tart preparation. As an unmistakable creation of a period in which this sort of optimism ruled (the 1950s), Tomorrowland effectively captured that appealing but naïve zeitgeist, one which promised that technology would solve virtually all of our current problems.

To wit: fifty years later, we still await those Pop Tarts.

In a 1959 commencement address, the president of Yale University articulated this optimism thusly to those about to embark upon their lives at work and at play:

(Because of technology) now we stand on the threshold of an age that will bring leisure to all of us, more leisure than all the aristocracies of history, all the patrons of art, all the captains of industry and kings of enterprise ever had at their disposal... What shall we do with this great opportunity? In the answers that we give to this question the fate of our American civilization will enfold! (cited in Kraus 1994:3)

And yet, we still await *those* Pop Tarts.

Meanwhile, elsewhere in the worlds of leisure, the gaming industry was also succumbing to an "optimism fever" for technology and all that it promised. In the 1950s, casinos in Las Vegas promoted high roller parties with a unique twist. These parties would take place at the crack of dawn on the roofs of the resorts of the city, where those lucky enough to be in attendance would gaze over the northern mountains to view the technological marvel of the time: an above-ground nuclear bomb detonation. At the time, these tests did not seem nearly as frightening as they would today: nuclear technology, after all, promised to deliver us more electricity than we knew what to do with – and for such a low price that it might as well be free. The potential perils of the technology were only peripherally acknowledged, via subtle signs such as the provision of plastic sunglasses for the high rolling observers.

Of course, these illustrations represent "straw anecdotes," and in fact and in life, technology has very often delivered. Most obviously, technology has transformed the ways in which health problems are understood, diagnosed, prevented and treated – and undeniably for the better. This report attempts to employ research-based insights to sift through a new technological effort to help us overcome a public health challenge – in this instance, the peculiar phenomenon commonly referred to as "problem" or "compulsive"

gambling. Importantly, and as per request, it attempts to do so in a manner that is accessible to policymakers and lay readers everywhere.

Todays: The Era of the First “Seat Belts”?

Gaming jurisdictions around the world are engaging in a discourse among policymakers, regulators, operators, and the general public in an effort to address the needs of those with gambling problems. These conversations are taking place on each of the six inhabited continents (all of which, notably, now contain widespread legalized gambling) and against a backdrop of a vast array of social, political, cultural, and economic settings.

Some of these policies under consideration are “walls-inward” policies designed to help gamblers inside of gaming locations, and some of these policies are “walls-outward” policies designed to help those in communities. To be sure, both kinds of policies are necessary if we are to provide a comprehensive series of safety nets and solutions for those who gamble problematically.

Among the “walls-inward” policies currently under examination by gaming jurisdictions, machine-based responsible gaming technologies are increasingly under scrutiny. An oft-invoked (if somewhat flawed) metaphor holds that these are the first “seat belts” for gambling machines. As is the case with the development of seat belts, this era represents the first in which gaming machines (and potentially other gaming devices) have been outfitted with mechanisms intended to help when help is needed – and ideally, to *not* intervene or intrude when no such intervention or intrusion is needed. It remains to be seen whether these devices will be as well-received or as effective as the now-universal three-point safety belt invention that Nils Bohlin (of Volvo’s automobile division) brought to the world in 1958.

Whatever the future may bring, when it comes to engaging responsible gaming policy matters, the relatively small province of Nova Scotia stands out as one of the world’s most progressive gaming jurisdictions. In contrast to gaming jurisdictions that have relied primarily upon social or political pressure to dictate decisions, this province has focused on collaborative research to test the efficacy of policy. It is fair to say that Nova Scotia is a jurisdiction with which the world’s gambling researchers have become quite familiar -- as a test tube of sorts, watched closely by those interested in addressing key policy decisions through research-based approaches.

To be sure, the key questions faced by Nova Scotia and other gaming jurisdictions contemplating the effects of responsible gaming devices (RGDs) are complex, but they might be summed up as follows:

Are the characteristics of these responsible gaming devices (RGDs) such that they might:

- a) help (or hurt) those who need or want them?
- b) interfere needlessly with those who do not?
- c) interfere with the ability of those providing the (gaming) product to remain sustainable?

Of course, stakeholders may not agree on the prioritization of these questions, but those interested in approaching these issues from a macro perspective would likely agree that however they might be prioritized, these are the questions that will ultimately prove central to these debates. For its part, the Nova Scotia Gaming Corporation has emphasized that its objective with this specific RGD is to encourage responsible play among the entire spectrum of machine players, rather than to “solve” problem gambling. This is an important emphasis, and its implications will be discussed later on in this report.

Tomorrows: Models for Moving Forward

If we turn our attention to the “tomorrows,” these are not issues that are going away anytime soon in gaming policymaking. Given the widespread movements to help those with gambling problems, and given the technological advances that are taking place, it is difficult to envision a future in which gaming spaces do not feature an increasing array of new technologies designed to help the problem gambler. It is our hope that this research project will help contribute to these important debates surrounding one of these technologies in particular.

Moving forward, this and many other research projects are increasingly informed by an engagement with the “Reno Model,” an approach to responsible gaming policy and research outlined in an important peer-reviewed article in the *Journal of Gambling Studies* (Blaszczynski, Ladouceur, & Shaffer, 2004). This model provides a framework for using research-based knowledge to guide decision-making on responsible gaming policy issues.

The Reno Model proposes the following:

A strategic framework should guide key stakeholders to develop socially responsible policies that are founded on sound empirical evidence rather than those that emerge solely in response to anecdotally based socio-political influences. Such a framework for action can promote public health and welfare through a range of prevention efforts that differentially target vulnerable community members and sectors; simultaneously, this framework also allows the gambling industry to deliver its recreational product in commercial markets that permit such activity. Within these

markets, socially responsible regulatory efforts that oversee gambling activities must demonstrate a likelihood of effectiveness for targeted groups and an awareness of the potential for regulations to cause unintended negative effects among those targeted and for the broader population of harm-free responsible recreational gamblers (302-303).

The above passage articulates a number of themes important to this research. This project seeks to examine the (always partial) evidence available to help guide stakeholders' decisions. It seeks to explore prevention efforts that target specific (and potentially vulnerable) groups, and it aims to do so in a way that recognizes Nova Scotia's decision to legalize and regulate gaming within its borders. In an effort to examine efficacy, we also seek to explore unintended consequences that might create "more harm than good" for those whom these programs target.

Particularly relevant to our concern with both unintended consequences and technological interventions upon the gambler's "career" is this discussion from the Reno Model:

Unjustified intrusion is likely not the way to promote responsible gambling. For example, player reactions to time limits forced on their gaming session might increase their problem behaviors. Responsible gambling is best achieved at the direction of the player by using all of the information available (312).

The gambling industry does not have the expertise or responsibility to diagnose or treat clinically individuals with gambling-related harms. Consequently, the industry should be guided by the principle that it is their obligation to establish and support links with qualified clinical services vested with the responsibility of providing clinical services (312-313).

Similarly, we have come to believe that it is not the casino operator's role to "play doctor," but rather to provide appropriate linkages with those who are so trained. More relevant to our discussion, if we cannot expect untrained humans to play the doctor role, it seems similarly inappropriate to expect gaming machines to conduct diagnostic work. Furthermore, after examining these issues more closely in this project, we are of a mind that it is not the industry's role to set mandatory gambling limits for gamblers. These important themes will be re-visited in the conclusions and recommendations section.

As this research was first publicly presented at the 13th International Conference on Gambling and Risk Taking in Lake Tahoe, Nevada (interestingly, Reno's neighbor community) it seems appropriate to reference an older framework first articulated by the founding clinical figure in the problem gambling field – a framework we might call the "Tahoe Model" (Bernhard, 2006). Dr. Robert Custer, the clinician who in 1980 led the movement to have pathological gambling included in the mental health diagnostic literature, and who trained many of the leading clinicians in the field today, was fond of invoking a "ski slope" analogy when talking about gaming issues.

When asked whether gambling was “bad” or “evil,” Custer felt that when taking the long view, gambling was not altogether that different from skiing. He noted that when skiing was introduced in a mountain town, there were a number of positive benefits to be anticipated: job creation, for one, and revenue generation, for another. Of course, among the other developments that could be expected were a handful of negative consequences: chief among them injured legs (or worse, injured *necks*). Though these risks were real and potentially severe, Custer did not believe that this meant that skiing was inherently “bad.” It did mean, however, that certain inevitabilities needed to be addressed whenever skiing was introduced into a community.

“You’d better be sure to build a hospital at the bottom of the hill,” Custer often said, and to extend the metaphor, he would suggest that the hill should display prominent signage about the risks inherent in the activity, and the importance of skiing responsibly. It was important, Custer pointed out, that those who worked on the slope did not attempt to fix broken legs – they could, after all, do more harm than good. The ski industry should, though, know how to get help when it becomes apparent that help is needed, and it should engage in any and all appropriate measures (technological or otherwise) to ensure that its offerings are enjoyed safely.

A generation later, Custer’s words seem to anticipate many of the sensibilities that the current generation of stakeholders in the gaming enterprise would endorse: the importance of letting professionals do that which they were trained to do, the importance of protecting the small percentage of the population who (perhaps inevitably) get hurt, the importance of establishing linkages between “all parts of the hill,” the importance of proper treatment for severe cases, and the importance of encouraging safe venues for play – using tested (and when appropriate, technological) measures wherever possible.

Study History

This particular study has its roots in a series of programs and symposia sponsored by the University of Nevada, Las Vegas’ International Gaming Institute (IGI). From its inception, the IGI has sought to convene a diverse array of stakeholders in meaningful efforts to address problem gambling. These efforts have included the provision of responsible gaming training for industry professionals, the support of educational conferences co-sponsored with the Nevada Council on Problem Gambling, the mandating of problem gambling education in all of the introductory hospitality management courses offered at the university, the hosting of a special working group on the provision of technologically-based responsible gaming programs for internet gambling, and support for research on pathological and at-risk gambling.

More recently, the IGI has participated in the development of INNovation Village, a unique UNLV effort to support cutting-edge research on technology in hospitality settings. These efforts are to be housed in a separate campus-within-a-campus replete with fully functional convention, hotel, food and beverage, and gaming facilities that allow for research to be conducted on everything from computer tablet-menus for restaurants to biometric fingerprint keyless entry for hotel rooms. The gaming

component of this research agenda is already active, and is housed in the IGI's Casino Lab, a facility that is perhaps unparalleled in an academic setting.

This casino lab has a rotating collection of two dozen current electronic gaming machines, as well as fully functional blackjack, roulette, pai gow, Caribbean Stud poker, and craps tables. In addition, separate "hard count" and "soft count" rooms mimic those found in casino environments, and Nevada Gaming Control Board signage is found throughout the facility. Carpeting, lighting, and seating were designed to create an ambience that is remarkably similar to that which is found in a real casino. The lab also contains a digital state-of-the-art surveillance system to provide the "eye in the sky" technology common in casino settings. In sum, virtually everything that can be found in an actual casino in Las Vegas can be found in this lab.

Hence, this research project embodies the spirit and the method of INNnovation Village, especially in its exploration of the ways in which technological devices can interface with technology users in everyday hospitality settings (in this case, gambling settings). Ultimately, it is our modest hope that this report can provide research-based insights on the applicability and efficacy of a responsible gaming device in casinos and other gaming settings.

This specific project began with a symposium hosted by the IGI in mid-2005. At this symposium, Techlink Entertainment, the developers of the responsible gaming device examined in this research, demonstrated the device to leading experts representing the university, the Nevada Council on Problem Gambling (the non-profit educational and training service organization in the state), the Problem Gambling Center (the state's primary problem gambling treatment provider, founded by Dr. Robert Custer), and gaming industry employees whose focus was on responsible gaming matters.

Later, the IGI was approached by Techlink to provide research-based advice on the device's testing, which was to take place in Nova Scotia. IGI researchers asked to conduct further research with Las Vegas-based gamblers in the facility's Casino Lab, allowing for more detailed examination of the relevant issues. These efforts were coordinated with the efforts of the Nova Scotia Gaming Corporation, which welcomed any and all appropriate research-based insights that the IGI would be able to provide.

It is important to note that this research was sponsored entirely by Techlink Entertainment, the developers of the technology examined here. The research team insisted that the study sponsor have no editorial say over the contents of the final report, nor would they have any say on the questions/topics that would be discussed and explored with gamblers in Las Vegas. The study sponsor readily accepted these conditions, and the study proceeded. All research methodologies were monitored and approved by the university's Office for the Protection of Human Subjects (#0506-1625).

Responsible Gaming Device Research

Given the amount of interest that machine-based responsible gaming features have generated, it is not surprising that a variety of researchers and interested parties have explored some of these issues previously. On occasion, because the RGD that Nova Scotia tested was often markedly different from (and ultimately, in the view of the research team, an improvement over) previous attempts, this research was only broadly relevant to our inquiries.

For instance, Sharpe et al (2005) explored changes in Australian machines that limited maximum bet size, slowed reel speed, and removed large note acceptors, finding minimal behavioral changes associated with each. Notably, each of these changes force events upon *all* gamblers, whereas the Nova Scotia device takes an approach that is fundamentally different in nature: it encourages personal choice rather than universally imposed features. As this project evolved, the research team came to believe that especially in North American contexts, the latter approach is more consistent with current theory (including the Reno Model), and more palatable to the entire spectrum of gamblers. Also in Australia, Nisbet (2005) interviewed club patrons about their interactions with the card-based technologies implemented there, and based upon admittedly limited information, concluded that “at worst, card-based gambling is neutral; at best, it has positive benefits.”

Previously in Nova Scotia, Schellinck and Schrans (2002) provided a comprehensive research-based evaluation of four responsible gaming features: on-screen permanent clocks, cash displays (as opposed to credit displays), pop-up reminders (indicating, for instance, how much time the gambler had played), and mandatory cash out requirements. This report also provided thoughtful recommendations on ways in which these features might be improved upon in the future. A later report by Schrans, Grace, and Schellinck (2004) explored modifications of a variety of responsible gaming features, including the ability to set a time limit (in minutes) for the current gambling session, a 30 minute pop-up screen that asked if gamblers wished to continue playing, a “10-minute warning” prior to a mandatory cashout, and a handful of other features reviewed in the previous research report. While once again these features were very different from those examined in this research, it should be noted that these research reports provided a pioneering empirical perspective on the effectiveness of these sorts of devices, and demonstrated Nova Scotia’s commitment to using gambling research to inform decision-making.

In South Australia, the Independent Gambling Authority conducted a 2005 “Inquiry into Smartcard Technology” that gathered information from a wide variety of stakeholders – a laudable and important approach whenever gambling policy is considered. In a very real sense, this approach is similar to ours – in that we seek to provide research-based advice informed by the best available information. The Authority’s report provides an impressive amount of material that distinguishes between the wide varieties of technological applications that were then under consideration in that nation. The technology providers interviewed for the report described a wide range of available options for these sorts of technologies, including:

- The ability to set limits for session time
- The ability to set expenditure limits
- The ability to limit the types of denominations gamblers can play
- The ability to limit maximum bets
- The ability to exclude on certain dates
- The ability to provide self-exclusion tools

Gaming industry leaders, meanwhile, raised a wide variety of issues and concerns, including:

- the reduction of gaming revenues (and therefore community contributions),
- the imposition of burdensome responsibilities upon gaming employees
- the expense of implementing such a system
- the lack of evidence in support of efficacy for problem gamblers
- privacy concerns
- the establishment of black markets
- concerns that setting limits could be made mandatory

Perhaps predictably, the former group was enthusiastic about the technology's potential, while gaming industry leaders were extremely skeptical about the impacts of these devices. The report also reported that service providers were supportive of efforts to incorporate responsible gambling technologies into gaming devices. Ultimately, the study authors felt that the evidence was compelling enough to encourage the adoption of these technologies.

In reviewing these reports, what is perhaps most notable to us is the degree to which the Nova Scotia RGD appears to represent a significantly less intrusive intervention when compared to those that have been contemplated and studied elsewhere. Specifically, the Nova Scotia device emphasizes personal responsibility and choice, and a relative lack of features that are forced upon the entire gambling population. Whereas other technologies potentially involve a more far-reaching intervention, and place far more restrictive constraints upon the gambler (developments that concern many stakeholders – and not only those invested in the gaming industry), the Nova Scotia RGD is one that simply allows gamblers to see what they have won or lost, and/or to set limits should they choose to do so.

The Nova Scotia RGD Features

Before proceeding to outline findings based upon the specific features of the RGD, it would be useful to discuss the relevant components of the system.

Enrollment

All VLT players between October 2005 and April 2006 were required to use a “Responsible Gaming Card” (RGC). To enroll and obtain a RGC, prospective players

could swipe a valid Nova Scotia ID card or driver's license, or they could enter the information contained on the ID or license. Importantly, the information obtained from either of these processes was then used to create an anonymous RGC and to ensure a "one card per player" system. For instance, letters in the first and last names were combined with numbers from birthdates and mail codes to create a unique (but anonymous) identity that ensured one card per player, but also ensured that no personal information was contained on the card. This is especially important because of privacy concerns and the potential harm that could result from having personal information linked to gambling patterns. In the focus groups conducted at UNLV, these privacy issues were raised by a large number of participants, who were worried that "the government" could access information on their gambling patterns. Even after thoroughly explaining the process through which anonymity was assured, many remained skeptical that this information would remain confidential (this skepticism was echoed in Nisbet's 2005 research). In the future, of course, this kind of resistance will be shaped by the degree to which consumers in a broad array of settings grow comfortable and confident with technological assurances of anonymity.

After this process was completed, a PIN number was selected by the participant. This step further ensured that privacy concerns were addressed, as no one could find a lost or stolen card and obtain information contained on that card without also knowing the PIN associated with that card.

Using the Device

After obtaining a card, players could proceed to any VLT and begin play. At the VLT, players would have to insert the RGC to activate the machine (prior to activation, the screen displayed no games or game features). Upon verification of the PIN number, players were allowed to play as they would with any conventional gaming machine.

Responsible Gaming Features

Once they began, players had the option to ignore the responsible gaming features offered, or to use any or all of the features. This consideration is no small one, as previous responsible gaming mechanisms have forced patrons to use them, raising concerns about personal responsibility and consumers' right to choose whether they set limits upon their gambling or not.

The "My Account" feature is in essence a summary statement of the player's wins and losses over the course of the past day, week, month, and/or year. A common feature in a number of loyalty card programs in other gaming jurisdictions (which often offer printouts summarizing the same kinds of information), this feature allows an on-screen display of this information. A related feature was the "Live Action" feature, which allowed gamblers to see how much they had won or lost during *this* gambling episode on *this* machine. So, while the "My Account" features were cumulative through the whole system, the "Live Action" feature displayed only the dynamics of the current gambling episode at a given machine.

The “My Money Limit” feature allowed players to set budgetary limits for their gambling. For instance, gamblers could set a limit of \$50 for that day’s gambling activity, and the device would enforce that limit. Importantly, these limits did not apply to winnings, so if a player with \$100 in the machine set a \$10 daily loss limit and then immediately hit a \$75 jackpot, the limit would only be reached if the player lost \$85 from that point onward.

The “My Play Limit” feature allowed players to set time limits for their gambling. For example, players could self-exclude (bar themselves from entering the system) on specific days (such as a payday, or on a spouse’s birthday), or for more extended periods of time. In the latter case, this feature begins to look much like the self-exclusion programs that are familiar in many jurisdictions around the world – enforced via the machine, however, rather than “at the door” or elsewhere in the brick-and-mortar gaming operation. Importantly, players could not go back and change their mind once they had excluded themselves from playing for certain periods. A related feature was the “48 Hour Stop” feature. This feature essentially allowed for a “cooling off” period whereby the player was excluded from the system for a period of 48 hours.

When making decisions to limit their play, gamblers were asked whether they were sure that they wanted to proceed – so that gamblers were not accidentally self-limiting when they did not want to do so. When gamblers reached the (monetary or time) limit that they had imposed upon themselves, the games would shut down and the gamblers would be told to remove their cards. If they attempted to put the card back into the machine or into any other machine, they would be denied and informed of the date when they could gamble again.

Part II: Qualitative Analyses

Qualitative Research

Qualitative Methodology

In developing the strategy for exploring the highly interesting and important research questions we hoped to examine, we found it useful to return to the origins of the now-widely used “focus group” – an oft-employed methodology that can refer to any number of increasingly diverse strategies (ours are outlined in the next section). The intellectual “founding father” of the focus group is Robert K. Merton, who called it the “focused group interview.” Merton played a monumental role in several of the pioneering and famed social scientific research teams at Columbia University from World War II onward.

In a 1990 essay tracing the history of this methodology, Merton reveals that it was the shortcomings of more traditional methodologies (such as the experimental design) that led to their search for a more nuanced approach. In a study of wartime “morale films” and their effects on audiences, Merton found that

The quantitative experimental design enabled one to determine the aggregate effects but provided no clues to *what it was about the film’s content* that might have produced the desired effects. The focused (group) interview was designed to provide such materials – it identified, provisionally and subject to checks through further quantitative experimental research, the aspects of situational experience leading to the observed outcomes... both kinds of data were required for sound conclusions. The rigor of the controlled experiment had its costs since it meant giving up access to the phenomenological aspects of the real-life experience and invited mistaken inferences about the sources of that experienced response; the qualitative detail provided by the focused group interview in turn had its costs since it could lead only to new hypotheses about the sources and character of the response, which in turn required further quantitative or, in this case, further experimental research to test the hypotheses (1990:xx-xxi, italics in the original).

In everyday language, Merton means that quantitative data has its limits when attempting to explain the complex details of everyday experience; meanwhile, qualitative data (such as that provided by the focus group) often cannot “speak to” the larger-scale, aggregate story that quantitative research, when done well, can provide. For our purposes, quantitative data on the whole of the Nova Scotia test sites can give us macro-level insights on play patterns when the RGD was introduced; qualitative data, meanwhile, can help us better understand *what it was about the RGD* that might have led to changes.

This mixed-method approach is perhaps especially important in the problem gambling field. Too often, the pathological gambling literature has focused on quantitative studies that can unwittingly silence the complex voices of those whom we are ostensibly studying. Research subjects are categorized rather than qualitatively interviewed,

pathologized rather than humanized, and subject to external labeling processes rather than empowered by internal interpretations that are truly “heard.”

This research attempts to remedy some of the shortcomings that Merton eloquently noted, using the most current qualitative and quantitative tools. It is in this spirit that we proceed to describe what we hope is a complementary methodology, incorporating both qualitative and quantitative insights from “the fields” in North America.

Qualitative research was carried out at the University of Nevada, Las Vegas’ International Gaming Institute Casino Lab, housed on the university campus. At the Casino Lab, Techlink Entertainment installed a gaming machine with an attached RGD in August of 2005, and the focus groups were conducted in September of 2005. In all, five two-hour focus groups were conducted with five separate groups of gamblers. Four of the groups were categorized and grouped according to their scores on the Canadian Problem Gambling Index (Ferris & Wynne, 2001), which labels individuals as non-problem, low risk, moderate risk, and problem gamblers. A fifth group was added to include *former* problem gamblers – which the research team defined as an individual who had participated in either a Gamblers Anonymous program or a formal treatment program, and who now had two years of “recovery” (i.e., time spent without gambling). This group was added because in previous focus groups and interviews, we have found that these individuals have achieved a certain distance from their gambling behaviors, and hence have a perspective that can be unique when compared to those who are still in the throes of an addiction.

Ultimately, it was our hope that the participants represented a full spectrum of gamblers and former gamblers. Participants were recruited via flyers posted in the community, announcements within the campus community, and through visits to The Problem Gambling Center, the community’s primary treatment facility for problem gamblers and their families.

All focus group participants were given orientation sessions with the device, and then allowed to play as long as they wished (except for problem gamblers and problem gamblers in recovery, who for ethical reasons received the orientation session only). The machines were set up in “demo” mode, which meant that participants were playing the game and interacting with the RGD without putting their own money into the machine.

Focus group participants were informed that their opinions were valued (positive or negative), that the university was conducting an independent research review of the technology, and that the university had no interest in either a positive or negative portrayal of the device. Participants were also told that their participation was voluntary, could be terminated at any time, and that their identities would be kept confidential.

All sessions were videotaped, transcribed, coded, and then re-coded thematically until a “saturation point” was reached with the data. In qualitative data terms, a saturation point is reached when subsequent re-codings yield no new themes left uncovered in previous codings. What follows in the next session are the discussion themes that emerged, the

differences observed in the different groups, and the reactions to the specific RGD features.

Qualitative Study Limitations

Of course, all research projects have limitations, and ours is no exception. We should emphasize that this qualitative exploration by its nature speaks primarily to the Las Vegas market – though there is increasing reason to believe that the region provides an important test tube. For one thing, Las Vegas has mainstreamed to a significant degree, and at the very least no longer represents the “deviant” locale for social scientific inquiry that it perhaps once was. In fact, due to the fact that so many residents have moved to Las Vegas from other locations around North America, many market researchers actually *prefer* to conduct research in Las Vegas, as it is an easy way to access research project participants from dispersed geographic regions. Finally, due to the sophisticated nature of the Las Vegas gambling market (and more specifically, the gamblers who reside there), it may be that this population can provide thoughtful insights that other residents of other areas cannot. Having said all of this, Las Vegas remains a unique location, and as a result, efforts to generalize should be done with caution.

Study participants were not randomly selected (they volunteered after responding to public requests to participate, and were then further selected based upon their gambling characteristics), so we cannot be certain that they are representative of the broader population – though this research design was created with hopes of achieving a sample that contained gamblers across the gambling spectrum (as measured by the Canadian Problem Gambling Index). Even in the best scenarios, focus groups share many of the same biases that shape our everyday lives, as they are conducted in public in the presence of a group of “others.” This may lead some to provide socially desirable answers (though the focus group facilitator repeatedly emphasized that participants should provide honest assessments and opinions, and care was taken to emphasize that all responses would be confidential). As we have noted, the participants did not gamble with their own money, due to human subjects and regulatory requirements. Finally, due to ethical concerns, participants with gambling problems were not allowed to play on the machines, so they were less able to “feel” the effects of the device than were those participants who interacted directly with it.

Discussion Themes

In the next sections, we will explore a handful of important themes that were discussed repeatedly throughout all of the focus groups (see Appendix A for the focus group questions that were used to guide the research). These themes include debates over optional vs. mandatory use; technology, resistance, and change; privacy and security; personal responsibility; casino operations/industry perspectives; beating the system/black markets/unintended consequences; and impacts on non-problem, moderate risk, and problem gamblers.

Optional vs. Mandatory Use

Virtually all respondents indicated that they liked the device's optional approach, which allowed patrons to access the responsible gaming features if they chose to – or ignore them if they so chose. “It shouldn't be forced upon you” was a common belief articulated in all groups, while many felt that a forced pop-up screen (like those available in many jurisdictions) “would be a real annoyance.” Another participant stated bluntly “I would object to the messages that pop up – that seems a disruption,” while several were concerned with the implications of forced features: “I just don't think anybody has the right to tell me I can't drop two or three hundred, you know, just twenty.”

Even problem gamblers and problem gamblers in recovery disliked systems that forced limits upon them, invoking concerns about “Big Brother” watching over their play. Others did not trust that this status would endure, and feared that that which was optional today might evolve into something mandatory later. Several participants in all groups extended this dislike to the mandatory nature of the card use (recall that the only mandatory component of this RGD system was that the responsible gaming card must be inserted to play). Many felt that they themselves would not use the RG features, and expressed dismay that they had to insert a card to play.

Overall, then, the voluntary nature of the RGD's features was very well received; conversely, features that are imposed by external sources met with strong resistance. In fact, this resistance to mandatory features in many cases extended to the mandatory card use, as many expressed concerns about a system that required that a card be inserted at all. Of course, at this stage, without mandatory card use, the RG features would be rendered practically useless (as someone who had set a limit could simply not insert their card on their next visit).

Finally, as we will discuss later, it may well be that the acceptance of certain features may be jurisdictionally- and culturally-specific. Certainly, Las Vegas are unaccustomed to any interference with their gambling activity, while gamblers in other jurisdictions – especially those where the government is more directly involved in management of the gaming enterprise, such as Nova Scotia – may be more receptive to more aggressive interventions.

Technology, Resistance, and Change

The theme of technological change and resistance was explored more thoroughly in each of the focus groups. Many participants cited similarities to technological change observed in banking or credit card environments. As might be expected with the introduction of a novel device, quite often participants had trouble understanding the nuances of the features, even after they had test-played. It is clear that orientation sessions and the “learning curve” are going to play an important role in the degree to which these technologies are accepted. If patrons cannot figure out the technology, they obviously will not be able to employ its features effectively.

Others were unclear on how the responsible gaming technologies would do what they set out to do, precisely. Some had a difficult time understanding that a lost card would not mean that the data stored on it was lost (as this data was stored in a central database). Other fears were more visceral. When it was suggested that the only way to truly ensure that the player in front of the machine was the player the machine “thought” it was, the notion of a retinal scan was suggested. Despite the fact that retinal scans are painless, one of the participants recoiled and blurted “ouch!” when the idea was presented.

This kind of resistance is to be expected with any new technology – especially one that monitors gambling activity, which is still stigmatized to some degree. Overall, however, most felt that while initial resistance would be substantial, patrons would grow accustomed to these features, and might even begin to rely upon them more frequently – just as they have with online banking or casino loyalty programs, for instance.

Privacy and Security

A major concern across all groups pertained to privacy and security. Despite assurances that their personal data would not be linked with their gambling data, and despite reassurances that this was not an attempt by the government to monitor gambling behaviors, participants were highly skeptical. Again, this might be expected given the newness of the technology; however, at the very least it is clear that these are significant barriers to widespread acceptance of the product. As one participant put it, “On the surface, this just sounds like a government ploy to track people.” Another chimed in “my first thought is no, they’re spying on you, the government’s spying on you. You say it’s not going to track, but yet there’s always some way to. No, I just think you’re spying on me (with this device).”

Other participants connected their concerns with media reports of rampant identity theft: “because of all the social security numbers that are being stolen now, I mean that’s where I would be real worried... I want to make sure this can’t be downloaded by some seventh-grader and he’ll have access to my data.” Access was not the only concern of one respondent, who envisioned this data being used by nefarious characters: “I bet you dollars to doughnuts, if I sold my card for \$500, you could find out who I was, and then....”

A minority (but substantial) group were not as concerned, opining that sociologically, we are well beyond a reasonable point of concern with security and privacy. “I don’t think there is such a thing as privacy in society anymore,” one casino employee stated, adding that he does not envision any incentive for the government to use gambling information given how popular gambling has become. Another similar point was brought up relative to “getting in trouble” with the government through this device: “as far as what I look at... if someone’s concerned about I didn’t pay my taxes, pay your taxes. Or you know your parking ticket, pay it. If you’re aware you have a warrant, you get arrested. If people are doing the right thing, you don’t have to worry about anything.” In one group, it was pointed out that this sensibility mirrored that of many Las Vegans during the mob era, when locals pointed out that “nobody got killed that didn’t deserve killin.” In sum,

many were of a mind that this was no more or no less invasive than devices that are already employed in everyday life.

These themes bring us to an important anthropological point. In a post-9/11 culture in which these very issues are hotly contested in the North American (and especially American) scene, it was not surprising that these concerns were loudly and passionately articulated – they are, after all, frequently reported in a variety of guises in the news media.

Personal Responsibility

When discussing the importance of “personal responsibility” in each group, participants grew very animated. One memorable participant’s response analogized the RGD experience with a date in adolescence: “when you were first demo-ing it for us, that’s the first thing I thought, it’s like, I was thinking, well, that slot machine is my date and that little machine on the side is my mother. Why do I want my mother... (*trails off*)?!”

Many participants – including those with gambling problems – emphasized that ultimately, the decision to gamble or not to gamble belongs to one person: the gambler. Even with problem gamblers, “the person has to know or a person has to want to stop themselves in the first place,” as one former problem gambler put it. In this light, it is important, as always, to emphasize that personal responsibility plays a major and obvious role in affecting gambling behaviors.

Many were of a mind, however, that this device actually enhances personal responsibility and complements this emphasis – in essence, they felt that the device contributes to a greater ability to embrace and “enact” personal responsibility. As one participant put it, “that (my account feature) will give them much more responsibility for themselves and much more power, too.” Some felt that in the same way that detailed knowledge of bank account expenditures can help people engage in “responsible spending” behaviors, a similar process would take place with gamblers: “I like being in control of this and seeing it... sometimes people do like, well, they (believe they) haven’t really spent that much. (But) yeah, they have. So to me, this, see this is a way to communicate better with yourself.”

Casino Operations/Industry Perspectives

Because the gaming industry plays such a central role in the Las Vegas economy, it was unsurprising that a number of casino employees participated in the qualitative research component of this project. These participants provided an interesting and fruitful “bigger picture” perspective, in that they were able to relate their own gambling experiences as well as broader business perspectives from the point of view of an individual who relies upon the industry to make a living.

Several of these employees, aware that the gaming industry was an increasingly global one, noted that acceptance of these devices may well be jurisdiction-specific. In the

minds of the participants, in areas where gambling has existed for some time, resistance might be more substantial, and in areas where gambling is offered in a wide variety of settings (such as Las Vegas, where gambling is available in virtually every format and on every corner), the technology may be less practical.

Predictably, a few were concerned about the device's impact on the industry: "I just worry... there's not going to be as much gambling revenues, you know, we're going to end up with other taxes and things... where else is that money going to come from?" Others felt that the gaming industry was unfairly "singled out" for problems that were individual and/or societal in nature. Inevitably, interesting comparisons were made with other problems such as compulsive shopping or eating.

This "singling out" of gambling, though, was countered by a few other employees and participants, who noted that unlike "shopaholism," there remain different and distinct stigmas associated with gambling, and that in contrast to alcohol and shopping problems, there is a capacity for monitoring via the gaming machines that does not exist in a bar or shopping mall. One respondent noted that with the vast array of settings in which shopping can take place, that activity "is so diverse. It's not something that could be put on a computer network and linked together." In other words, because gamblers and gaming environments *can* effectively monitor gambling patterns, many believed that these types of "monitoring features" (such as the "My Account" and "Live Action" features) *should* be available to those who want to use them.

In the final analysis, most gaming employees were philosophical about these devices and ultimately supported the use of responsible gaming technology: "I think you have to do something to try to mitigate the dangers of gambling, but at the same time, I believe that gambling is here to stay... I think it's an unstoppable force, much like alcohol, and I think that attempts to restrict it are almost completely as silly as Prohibition. It's so innately a part of our culture. And because of that, I think you do have to have some things like this, if we start projecting into the future thirty years. I like it." This finding will surprise some, perhaps, but probably reflects a tribute to the ways in which responsible gaming thinking has penetrated the rank and file who work in gambling environments.

Beating the System, Black Markets, and Unintended Consequences

Participants were also asked to brainstorm on ways to get around the system, as well as unintended consequences and impacts. In the problem gambling groups, participants indicated that they had already been thinking about how this device could be "beaten."

Several participants suggested that back room places could be opened. Others feared that sharing or selling cards could become widespread – a concern that proved prescient, as this was precisely what happened in Nova Scotia, as we will discuss later. One respondent further expressed that if he had been using a loved one's card and then had his losses "discovered" when that loved one played later on, trouble would ensue.

Problem gamblers and those in recovery were quick to worry about whether these cards would lead some to engage in other illegal activities, such as stealing cards or stealing money to make up for gambling losses upon getting locked out of the system by a “limit” restraint. While severe pathological gamblers certainly commit crimes anyway (and in jurisdictions without RGDs), it is clear that these are developments that should be monitored in an ongoing fashion should these devices be implemented.

Others astutely pointed to the cognitive distortions that pathological gamblers are prone to, noting that seeing a loss of \$500 might trigger chasing behavior in which the gambler sought to gamble more money to “win back” those losses. One final potential for cognitive distortion was suggested by a pathological gambler who noted of the “Live Action” feature (which in essence summarizes the wins/losses for *this* gambling episode, on a single machine): “I say, oh, my God, (this machine) hasn’t hit a jackpot, this is due, I’m going to get this, this is mine.”

After significant discussion, however, pathological gamblers and former pathological gamblers tended to feel that they were engaging in chasing and “messed up thinking” anyway, and that this potentiality was not worth a tremendous amount of concern. In essence, this belief was prominently articulated throughout all of the groups’ discussions; most felt that while there would certainly be some unintended consequences, they did not believe that these would be more destructive than the consequences already associated with problem gambling. Finally, as some noted, it could be that educational information (not currently provided in this device, as we will discuss later) could actually help potential pathological gamblers avoid some of these unintended consequences, by alerting them to warning signs (such as criminal activity to support a gambling habit).

Impacts on Non-problem, Moderate Risk, and Problem Gamblers

Even though the Nova Scotia Gaming Corporation sought to provide tools to help players gamble responsibly (as opposed to an objective that sought to “solve” problem gambling), we were of a mind that the entire spectrum of gamblers – from non-problematic to problematic – deserved a voice in the RGD’s evaluation. Each group was asked to give an assessment of the device’s efficacy with a variety of gamblers ranging from non-problematic to problematic, and all had strong opinions that converged fairly consistently into a consensus: for those in the throes of an addiction, this device would not likely provide a solution, but for those in “normal” or “moderate risk” situations, there is significant reason for optimism.

A strong majority of the problem gamblers and non-problem gamblers believed that it would be naïve to suggest that this device would provide a solution for pathological gamblers. As one problem gambler put it, “it seems to me that problem gamblers are probably going to find a way around this card anyway... I just don’t think it’s going to solve problem gambling.”

Those with experience in recovery were eager to point out that “if someone has that problem, if they’re already over the edge, the only way you’re going to serve them better

is (a local treatment program) where they can get their immediate help.” To most, though, this did not mean that the product should be rejected: “problem gamblers will figure a way around it... but people who aren’t... this may help those people at some point before they ever got that far.”

In sum, participants predicted that the most powerful impact would be felt not by those with the severest problems, but by those in the “normal” or “moderate risk” groups of gamblers. Overall, these participants felt that the RGD should be thought of as a modest tool that complements other responsible gambling approaches, rather than a one-size-fits-all, this-device-solves-all approach. This is consistent with the Nova Scotia Gaming Corporation’s stated goal to emphasize the encouragement of responsible gambling among machine players, and hence should be taken as a positive sign.

Reactions to Specific RG Features

Focus group participants were asked about their opinions on the specific RGD features, and asked to discuss their strengths and weaknesses. In the following section, we discuss their responses to this area of inquiry.

My Account

By far, the “accounting” features were the most popular among respondents – a belief supported in the quantitative analyses as well (and a similar finding was reported in Nisbet, 2005). Many who received these features positively noted that these accounting mechanisms are widely available in other settings already, “like (with) American Express” or casino loyalty cards. The latter are widely used in Las Vegas, and users may access the same kinds of information provided in the RGD (amount won/lost over a variety of time periods) – the difference is that the RGD puts this information on the screen, while information from loyalty programs is generally accessed via information desks. From a convenience perspective, the RGD provides greater service, as the information is more readily available without the obligation of signing up for a loyalty program.

Respondents were highly enthusiastic in their endorsement of these features: “I just thought this was really clever... I would know how much I’ve spent in the past week. I have a financial background, so for me, this would be great.” The lone counterpoints that were made referenced the fact that some gamblers may not want to be made aware of their status: “a lot of people don’t want to know how much money they’ve lost. They play sort of as recreation.” Of course, a benefit of this RGD is that if players want to see whether they have won or lost over given periods of time, they may – but if they choose not to, they do not have to see the amounts.

Live Action

This feature – which allows for a more specific accounting of the gambling activity on the current machine during the current gambling episode – was also enthusiastically received in both the qualitative and quantitative analyses. Participants in the focus groups liked that they could see the “performance” of this machine at any given time. Problem gamblers, while endorsing this feature, nevertheless expressed concern that a potential unintended consequence might be that players might “determine” whether the machine is “hot” or “cold” or “due” – hence feeding the irrational thinking that characterizes many problem gamblers’ experiences. Overall, however, these groups were also enthusiastic in their reception of this accounting feature.

My Money Limit

Fewer focus group participants felt that they would use the “limit” features (and once again, this belief was reinforced by the available quantitative data). Those who did indicate that they would use these, however, were enthusiastic: “I like this a lot. I like the idea that you can set a limit.” Others – especially non-problematic players – felt that those who are already responsible players would not engage these features: “I wouldn’t use it because I feel I have enough control to leave when I think it’s enough.” It appeared that those experiencing occasional problems with their gambling expenditures might be most likely to use these features. Furthermore, infrequent use is not necessarily a reason to reject these features, as those in desperate situations might find them useful on rare occasions, and this could be reason enough to embrace them. We will return to this theme later in this report.

My Time Limit

Again, fewer believed that they would use this feature, but the small minority of would-be users endorsed its use: “I absolutely love the time limit and the days excluded.” Some problem gamblers felt that this feature could reduce conflicts between gamblers and those “left behind at home,” suggesting that once more, this feature may be more useful with a minority of gamblers who have experienced some problems at some time. However, even problem gamblers and former problem gamblers noted that family problems caused by gambling were ultimately their responsibility – though this RGD, once more, could provide “tools” to aid personal responsibility. These themes will be further explored in the section focusing specifically on different groups of gamblers.

48 Hour Stop

Overall, few felt that they would use this feature, with one notable exception. Most vocal in their support of this feature were problem gamblers and those in recovery, who talked about times that they wanted to leave, but just “had” to lose the rest of their money. As

one former problem gambler put it, “there are times when I have been in there and I’ve been in there for hours and hours and I am so tired, my ass is numb, and I just want to go home, but I can’t make myself until it’s zeroed. I don’t know why that is, but it is. But if I had that ‘stop’ feature I could exclude myself, OK, OK, I’d go now.” This theme was articulated and supported by several of the problem gamblers, some of whom added that they might push the 48-hour Stop feature impulsively – and then be angry with themselves for doing so. Ultimately, however, the consensus was that in the long run they would be glad to have the option to self-ban for a couple of days.

Sub-types of Gamblers

Because focus groups were divided into five groups (non-problem gamblers, low-risk gamblers, moderate risk gamblers, problem gamblers, and problem gamblers in recovery), we were able to isolate the opinions of each group. Importantly, grouping “like” individuals in a focus group also tends to yield greater comfort and openness among participants. In the next section, we discuss the opinions and group conversations of the separate focus groups.

Non-Problem and Low-Risk Gamblers

Overall, those without gambling problems were fascinated by the nuances of the device, and fascinated by the oft-misunderstood phenomenon of problem gambling (they had more questions about the disorder than they had about the device). By and large, this group indicated that they would use primarily the accounting tools to keep track of their (limited) gambling expenditures, and they liked having the ability to do so conveniently. This finding supports the notion that this device could work in concert with the Nova Scotia Gaming Corporation’s objectives of encouraging responsible gambling behaviors among all machine players. Enthusiasm for the other features was minimal for this group on a personal level, but overall, support for the RGD was strong.

Moderate Risk Gamblers

Interestingly (but perhaps predictably), in contrast to the problem gamblers and the problem gamblers in recovery, this group did not *self-identify* as “at-risk” or “moderate risk” and hence did not reference the device as potentially helpful to *them*, specifically. It should be noted, however, that this group – however they may self-identify – endorsed the use of this product (with a couple of exceptions), indicating that they may have recognized the potential utility of these features with their own (moderate) gambling problems. In particular, this group also liked the accounting features – and indicated that this component in particular may provide a tool to encourage responsible gambling behavior. In contrast to the non-problematic players, some did indicate that they might be interested in the “limit” features as well.

Problem Gamblers

Problem gamblers tended to like the “limit” features more than non-problem gamblers. Virtually all felt that this device would not help them when they were “at bottom” (i.e., at their lowest point), but many felt that this might have helped them earlier on in their gambling careers. The problem gamblers were also passionate in their belief that more educational features should be added to the device, noting that they were largely oblivious to the nature of the disorder when they were gambling. As one noted, the positive benefits of enhancing educational features could be indirect: “it could be that somebody’s who’s not a problem gambler sees that (educational) screen and knows their friend is and does an intervention.”

Overall, this group felt that “if it helped some, it would be worth the effort” – and overall, they believed that this device would indeed “help some.” One current problem gambler put it this way: “that’s the final – I mean if you’re a responsible gambler, you don’t need a machine because you’re responsible. But if you’re a compulsive gambler, the machine ain’t going to do nothing for you because you’re going to take a shot anyway. But I think there’s a small percentage that it might help (in-between).”

Often, these matters were debated in insightful back-and-forth debates between differing viewpoints. For instance, one current problem gambler said that “I kind of think it’s a good idea because, as a compulsive gambler, you’re really not aware of how much you’ve got invested in the machine. I mean I know I’ve gone back to the ATM three times, but after I’ve, you know, gone so many times, I can’t really keep up with how much I’ve lost, and if you have it staring there right in my face, oh, I’ve gambled \$750 this week (I would say) I think I should stop.” Meanwhile, another participant disagreed: “I don’t know if I agree with that. It doesn’t stop me from cashing in for another thousand or two thousand... I’m going to blow the money if I can get it.”

Among these participants, there was a strong belief that problem gamblers would find a way to “beat” the card. Specifically, participants cited card sharing: “get family members to apply for these cards, and then you have access to multiple different cards,” while another pointed out that one way to potentially get around the system was to obtain “a phony ID card.”

On chasing losses – a vital matter because of concern that posting loss amounts could potentially trigger destructive thinking and chasing – several participants were concerned, but ultimately most evolved into a belief that “you’ve probably already chased” and that this would not contribute significantly to further destructive impacts.

One participant had an interesting take on “impulsivity:” “besides compulsive, I mean impulsive. If I have that feature that I can limit my amount of money, I’m going to say, ‘I’m spending too much,’ and I’m gong to push that button. I may regret it three seconds later and be really pissed off at myself, but down the road, I’m going to be glad I pushed

that button. I like this feature a lot. I can't take it back." Hence, in this instance, impulsivity trumps compulsivity, and in a way that may benefit problem gamblers.

Overall, this group was of a mind that when they were "at bottom," there was little outside of a clinical intervention that would have helped them. However, they received the device positively, and thought it would encourage responsible play among those in the general gambling population.

Problem Gamblers in Recovery

Overall, this group responded similarly to the group of current problem gamblers, with a few exceptions. Importantly, this group was a bit more pessimistic about the impact on problem gamblers, but was more optimistic overall about the efficacy of the device: "I think it would help... people who are normal gamblers or even pre-compulsive, I think it'll help them not to become compulsive gamblers." Another provided this retrospective: "in the beginning... if I had seen, oh my God, in one week I had lost \$1500, you know, maybe that would've done something. You know, at the end, no. No. Not after crossing that line... the only way I would've gotten off the machine is if somebody had pulled the ejector button and sent me right out!" Recall that the Nova Scotia Gaming Corporation's objectives are to encourage responsible gambling, rather than to "solve" problem gambling. Hence, any comments that express concern that this would not help those in the throes of an addiction should be carefully considered, as this was not necessarily what the product set out to do.

Once again, education was brought up repeatedly as an additional feature that these participants would like to see. With this group, the consensus view is probably best captured in this individual's insight: "when gambling was fun for me, I probably still wouldn't have set a limit because it wasn't that big a deal. I could go play ten, twenty bucks and then go and leave. When I became addicted, there was no limit... once I was there, you couldn't tell me no. (But) it's a good concept. I do appreciate the information it gives... maybe we can sway a few people who are hurting themselves."

Overall Impressions

In this section, we will summarize the overall impressions held by all of the participants. Despite spending a good deal of time discussing the "tough questions" and engaging the downside, a strong majority of participants in all groups liked the product. At the end of each focus group, participants were asked to give a "thumbs up" or "thumbs down" opinion. Ultimately, roughly three-fourths of the participants in each session believed that the device should be embraced, with those reserving an endorsement doing so usually because of privacy concerns.

One participant summed up with this conclusion: "Well, I really like it. It gives me great options. I mean people in this world now, they like options." This statement captures a sentiment expressed quite often during the focus groups: it was difficult for even the skeptics to find fault with features that were optional in nature and that gave them the

ability to be better informed about their gambling, and the ability to apply controls to their gambling behavior if they so chose. In particular, all groups seemed to genuinely appreciate the ability to see the amounts of money they had won or lost over a given period of time – and conversely, few were able to come up with any reasonable objections against a mechanism that allowed gamblers to see whether they were “up or down.”

Many noted that public opinions on the device would likely evolve (and indeed, opinions on the device often evolved *within* and *during* the focus groups – a common dynamic in focus groups, and one that “snapshot” research such as surveys cannot capture). One participant put it this way: “I think a lot of people would initially have rather negative feelings about it, but I think that after they got used to it, they would see features that they would use that, you know, would satisfy them.” Several had the impression that they felt that they had seen the future, and that responsible gaming features were going to be “more, not less important” in the tomorrows of gambling – especially given gambling’s ubiquity and reach.

Many Las Vegans took a broader view: “Overall, I think it’s really good, and I think it would work in the places that are much more condensed, like in Mississippi it’s on boats, whereas here it’s in every gas station, everywhere.” One casino table games manager made a further jurisdictional distinction in endorsing the device: “I think this is an extremely powerful product. Looking at it from an operator’s standpoint, if certain jurisdictions, brand-new jurisdictions... in jurisdictions that are strongly wanting to get gaming on, this would be a kind of ticket into the game.”

Part III: Quantitative Analyses

Quantitative Research

Initially, the plan of the research team was to evaluate, on a player-by-player basis, the degree to which player behavior (specifically, gambling behavior) changed over time. We were then planning on comparing the sub-group of gamblers who used the RG features with the sub-group of gamblers who did not.

Once we were informed that card-sharing occurred on a fairly regular basis during the trial period, however, we were forced to re-think our approach. For one thing, we could no longer assume that each card represented one player, and this important consideration should be kept in mind when contemplating the findings presented in this section. This obviously limited our ability to make inferences about individual player behavior, though we could still examine play on a per-card basis, and we could still provide some feedback on gambling behaviors in the aggregate during the trial period. In this section, we will summarize the player data provided to us by Techlink Entertainment and the Nova Scotia Gaming Corporation, gathered from the gaming locations in Nova Scotia where the RG cards were in use.

Over the course of the trial period, slightly more than half (51.1%) of the cards in use opted into at least one of the RG features at least one time. In other words, more than half of the cards used the RG features at some point. By far the most popular features were the “My Account” features (33.7% used one of these features at least once), and the “Live Action” features (34.2% used this feature at least once). This means that in both the quantitative and the qualitative analyses presented here, the evidence strongly suggests that these features were the most popular.

Recall that within the “My Account” feature, gamblers could learn how much they had won or lost over the past day, week, month, or year. Over the course of the trial period, 19.9% viewed a “past day” win/loss statement, 12.6% viewed a “past week” win/loss statement, 12.4% viewed a “past month” win/loss statement, and 16.12% viewed a “past year” win/loss statement.

Other features were less popular (though as we discuss in other sections, this does not necessarily indicate a lack of effectiveness). Among the “My Money Limit” features, 3.0% used a daily monetary limit feature at least once, while 0.2% used the weekly monetary limit feature, and 0.1% used the monthly monetary limit feature. Meanwhile, 1.3% used the “My Play Limit” feature to exclude themselves from gambling at least once.

Next, descriptive statistics were reviewed to gain a basic understanding of the data, with regard to the shape of each variable’s distribution, variance, and mean value. Scatter plots were also reviewed to identify the shape of bivariate (two-variable) relationships. These plots reveal a picture of the relationship between two variables, which helps determine the appropriate analytical techniques and/or variable transformations.

Table 1 lists the basic descriptive statistics associated with the original variables. The Skewness and Kurtosis variables are of particular interest, as these values are both describing non-normal distributions for most of the variables in Table 1. Normal distributions are ideal for many advanced forms of analysis, which are characterized by Skewness and Kurtosis values equal to zero.

Table 1
Descriptive Statistics for Variables Measured at the Per Card, Per Week, Grain
(n = 12,814)

Variable	Mean	Median	Std. Dev.	Skew. ¹	Kurt. ²	Min.	Max.
# of Inserts	6.57	4.00	9.52	4.82	37.53	1	175
Cash-in	\$509.95	\$189.13	\$885.26	4.04	22.84	\$0	\$10,880
Cash-out	\$404.70	\$100.95	\$805.29	4.36	26.76	\$0	\$10,245
Cash Played	\$1,764.96	\$757.88	\$2,826.51	4.08	26.46	\$0	\$38,409
Cash Won	\$1,659.70	\$694.10	\$2,717.29	4.13	27.21	\$0	\$37,794
Mins. Played	197.34	106.00	259.40	2.98	13.32	0	2,887
@48hr Stop	0.01	0.00	0.09	13.52	225.88	0	3
My Acct.	1.63	0.00	6.22	10.87	183.45	0	175
My Acct. day	1.20	0.00	6.07	11.91	194.86	0	146
My Acct. wk	0.26	0.00	1.13	10.74	193.61	0	38
My Acct. mo	0.24	0.00	0.99	10.42	174.86	0	29
My Acct. yr	0.34	0.00	1.42	12.21	249.00	0	52
LiveAction	2.48	0.00	8.25	7.61	91.20	0	203
Day Limit	0.04	0.00	0.24	8.94	113.83	0	6
Week Limit	0.00	0.00	0.04	23.04	529.13	0	1
Month Limit	0.00	0.00	0.04	29.36	15.72	0	2
Days Excl'd	0.02	0.00	0.26	954.51	318.62	0	7
Casino Rev.	\$105.25	\$53.00	\$255.74	2.10	18.86	-\$2,428	\$3,417
Session Loss	\$24.86	\$14.98	\$74.64	1.36	42.83	-\$1,330	\$1,003

Table 1 Notes. ¹ Skewness results from distributions constrained by zero with great right-trailing values. Skewness is equal to zero in a normal distribution. ² Kurtosis results from an abnormal concentration of values around a mode or tight range of values, creating a center-steep distribution. Kurtosis is equal to zero in a normal distribution.

From this table, we can get some idea of the wagering behaviors on a per-card basis, and we can also learn some more things about the popularity of some of the RG features. For instance, the mean number of card inserts per card, per week was 6.57. We can see, however, that the maximum number of inserts per week for any given card was 175 (perhaps reflecting card sharing), and hence, the median usage of 4.00 might be a better measure of the “average” (because the median, as the “middling” figure, is less susceptible to extreme values than the mean, which is a calculated average). These considerations are also important when considering the values for other variables, such as cash-in, cash-out, cash played, cash won, and minutes played.

We can also see in Table 1 that the “average” card (as calculated by the mean) used a “My account” feature 1.63 times per week, and we can see how often the “sub-features” (checking amount won/lost over the past day, week, month, and year) were used as well. The “Live Action” feature (which showed won/loss during *this* gambling episode on *this*

machine) was also relatively popular, with approximately 2.5 uses per card per week. When measured on a per-card, per-week basis, the other features proved far less popular.

Additional variables were then created from the Table 1 list, such as “RG Use,” which we used as the key grouping variable for the analysis of variance. This variable was equal to one if the subject ever selected any of the RG features, and it was set to zero if he or she did not.

Another categorical variable was created to group winners and losers. This variable was set to one for subjects who produced more cash-out than cash-in, at the weekly grain. For those who produced more cash-in than cash-out, this variable (win/loss) was set to zero. These and other variables will be further described and discussed in subsequent sections.

Table 2 is a correlation matrix, featuring continuous variables from Table 1. Continuous variables feature many different observed or recorded values, as opposed to a categorical or grouping variable, which typically features a few assigned values (a correlation matrix of categorical variables would not be meaningful in most cases). In this case, a correlation table of continuous variables indicated the degree to which these variables were related to each other. A negative coefficient indicates a relationship characterized by an increase in one variable and a corresponding decrease in another. Positive coefficients indicate relationships in which increases in one variable produce increases another. All variables are perfectly and positively correlated with themselves, hence the 1.00 values in the diagonal of the matrix. All bivariate correlations in Table 2 are statistically significant at the .01 alpha level.

Table 2
Correlation Matrix: Variables Measured at the Per Card, Per Week, Grain (n = 12,814)

	Mins. Played	Cash-in	Cash-out	Cash Played	Cash Won	# of Inserts	Casino Rev.	Sessn. Loss
Mins. Played	1.00	--	--	--	--	--	--	--
Cash-in	0.77	1.00	--	--	--	--	--	--
Cash-out	0.73	0.96	1.00	--	--	--	--	--
Cash Played	0.79	0.91	.086	1.00	--	--	--	--
Cash Won	0.78	0.91	0.87	>0.99	1.00	--	--	--
# of Inserts	0.73	0.51	0.49	0.47	0.47	1.00	--	--
Casino Rev.	0.35	0.44	0.17	0.46	0.39	0.21	1.00	--
Sessn. Loss	0.32	0.11	-0.06	0.13	0.08	-0.08	0.58	1.00

Table 2 note. All cells contain significant correlation coefficients at the .01 alpha level (2-tailed tests).

Analyses of Variance (ANOVA)

ANOVA is statistical procedure designed to test for differences between groups with regard to the mean, or average, value of a given variable. In this case, the focus was to determine whether differences were present between the RG Users and those cards that did not use the RG options. Each behavior of interest was expressed numerically. For example, the amount of cash-in, per week, per card was one behavioral outcome that was

tested. Each case in the data set corresponded to a tracked value for this variable. Further, each case belonged to one of the two groups, RG Users or NonUsers. ANOVA was employed to determine whether the RG Users produced significantly more or less cash-in than the nonusers.

Ideally, the grouping variable would be one that equally divides the sample into groups. In this case, RG Use was an ideal variable. As shown in the ANOVA tables, the NonUser group represented 49% (6,267) of the cases, while the RG User group included 51% (6,547) of the cases. As a result of this nearly even split, the usage distinction created a desirable grouping variable. The number of cases in each group remains constant throughout the ANOVA's described in Tables 3 through 7. These group membership numbers are found in the columns labeled "n."

Data Grain

The grain of the data was weekly, and on a per card basis. That is, the results of each case (i.e., card or person) were expressed in terms of activity per week. With the exception of Table 6, The ANOVA results identify differences at this grain. Despite evidence of card sharing produced from corollary research, the data were not converted to a "per session" basis. Such a conversion would introduce other forms of bias. For example, those who played frequently for brief amounts of time would appear quite different from those who played infrequently, but recorded lengthy sessions. However, it is quite possible for both types of players to log the same amount of weekly play. Additionally, if play/behavior/outcomes are reduced to a per session basis, by dividing by the number of sessions per week, variation at the case or player level can be substantially reduced. This is especially important when covariance-based methods such as ANOVA and multiple regression analysis are employed to analyze the data. That is, if variance is removed from the variables by restating them as an average, the chance of producing a statistically significant effect in correlation-based measures is reduced. Because of these reasons the data remained at their original measurement grain (i.e., activity per card, per week).

ANOVA Results

The results of Table 3 indicate a significant difference in the number of card insertions per week, per case, between the RG Users and NonUsers. The average number (mean) of weekly insertions for RG Users was 9.05, while NonUsers recorded an average of 3.97 insertions. This difference was statistically significant. Assuming there is no measurement error, this means that the RG users recorded a greater number of gambling sessions per week than those in the NonUser group.

Table 3. ANOVA
Number of Insertions Per Week, Per Card, by User Group (df = 1 & 12,812)

Group	Mean	n	Std. Dev.	ANOVA Results		
				F	p-val.	Eta Sq.
NonUser	3.97	6,267	4.77	982.25	< 0.001	0.071
RG User	9.05	6,547	11.95			
Total	6.57	12,814	9.52			

The two groups were also significantly different in terms of the number of minutes played, per card, per week. Per Table 4, NonUsers played an average of 126 minutes per week, while RG Users played an average of 266 minutes per week. This result is consistent with the Table 1 result, in that the gambling activity level of the RG Users appears to be greater than that of the nonusers. That is, both the number of card insertions and minutes played per week are greater for RG Users.

Table 4. ANOVA
Minutes Played Per Week, Per Card, by User Group (df = 1 & 12,812)

Group	Mean	n	Std. Dev.	ANOVA Results		
				F	p-val.	Eta Sq.
NonUser	125.95	6,267	168.85	1,001.70	< 0.001	0.073
RG User	265.68	6,547	308.00			
Total	197.34	12,814	259.40			

Based on the results of the first two ANOVA's, it was not surprising to find that the weekly cash-in per card was significantly greater for RG Users. Per Table 5, the average RG User recorded a weekly cash-in of \$722.58, while the NonUsers posted an average cash-in of \$287.82. The difference between these two group means was equal to \$434.76.

Table 5. ANOVA
Cash-in Per Week, Per Card, by User Group (df = 1 & 12,812)

Group	Mean	n	Std. Dev.	ANOVA Results		
				F	p-val.	Eta Sq.
NonUser	\$287.82	6,267	\$560.29	821.71	< 0.001	0.060
RG User	\$722.58	6,547	\$1,068.18			
Total	\$509.95	12,814	\$885.26			

So far, the results have indicated that NonUsers do not insert their cards as often as RG Users, their cash-in is significantly less than RG Users, and their minutes played result is well below that of RG Users. However, the loss per player, per week, per session, is not significantly different, as shown in Table 6. That is, the RG Users lose an average of \$23.84 per session while the NonUsers lose an average of \$25.93 per session. Despite the

similar outcome, in terms of loss per session, the RG Users appear to gamble more. This was the only ANOVA performed at the session grain/level.

Table 6. ANOVA
Loss Per Session, Per Week, Per Card (Player), by User Group (df = 1 & 12,812)

Group	Mean	n	Std. Dev.	ANOVA Results		
				F	p-val.	Eta Sq.
NonUser	\$25.93	6,267	\$78.96	2.54	0.113	< 0.001
RG User	\$23.84	6,547	\$70.25			
Total	\$24.86	12,814	\$74.64			

With regard to activity levels, RG users have consistently outpaced NonUsers. Cash played offered no exception to the trend. Specifically, the RG Users recorded an average of \$2,362.36 in cash played, per card, per week, while the NonUsers averaged only \$1,141.86 (See Table 7). This difference was statistically significant, under the test parameters of the study.

Table 7. ANOVA
Cash Play Per Week, Per Card, by User Group (df = 1 & 12,812)

Group	Mean	n	Std. Dev.	ANOVA Results		
				F	p-val.	Eta Sq.
NonUser	\$1,140.86	6,267	\$2,183.81	627.24	< 0.001	0.047
RG User	\$2,362.36	6,547	\$3,254.28			
Total	\$1,764.96	12,814	\$2,826.51			

Overall, then, on a per-card basis, RG use was associated with higher levels of play, at least as it is measured above. Heavier gamblers tended to be RG users, and RG users tended to be heavier gamblers.

Limitations

As previously discussed, it was determined that some degree of card sharing had occurred among the study's subjects, which limits our ability to make statements that rest upon "one card, one player" assumptions. Moreover, the exact degree to which this sharing practice occurred is not known. Further, the distribution of this practice is also unknown, specifically with regard to the grouping variable. That is, it is not known whether RG Users engaged in a greater degree of card sharing than NonUsers.

To this point, descriptive statistics have been reviewed, along with a correlation matrix, and some basic one-way ANOVA's. These procedures have provided a general review of the data and established a foundation for further inquiry and analysis capable of a stronger causal inference. For example, in one-way ANOVA, the possible effects of other variables on the group mean of the primary variable are not considered. As a result of this

limitation, more complex procedures are required to identify higher-order differences in behavioral outcomes. One such inquiry sought to better understand the difference in minutes played between user groups (i.e., RG Users vs. NonUsers). To achieve this goal, a multiple regression analysis was conducted.

Multiple Regression Analysis

The design of this analysis allowed the effect of group membership to be estimated, after controlling for the effect of other variables theorized to affect the same behavior. Group membership was defined as RG Users or NonUsers. That is, each case was a member of one, and only one, of these groups. In this case, the model attempted to explain the change in minutes played, per week, per case. The role of group membership was of particular interest. Specifically, does knowledge of group membership aid in explaining the change in minutes played, per week, per case.

By examining the effect of group membership along with the other competing predictor variables, the result carries a stronger causal inference than the one-way ANOVA result. In fact, it could be said that the ANOVA is embedded in the multiple regression analysis. The only difference is that other variables theorized to affect minutes played are also included.

Data Screening

The purpose of the data screening was to review the condition of the data before using them in the multiple regression analysis. That is, there are certain ideal as well as problematic conditions of data, which can greatly affect the results of regression analysis. In this section of the report, diagnostics related to linearity tests, outliers, data distributions, and bivariate correlation are briefly discussed.

Specifically, the data were reviewed for evidence of non-linear relationships (or curvilinear relationships). Regression analysis stems from the general linear model so curvilinear relationships between variables would not be measured accurately. In such a case, it is likely that additional forms of existing predictor variables would need to be added to the model. Fortunately, no evidence of curvilinear relationships was found in the data set used to construct the multiple regression model.

Both univariate and multivariate outliers were detected, by means of various graphs and statistics. Simply put, univariate outliers are cases with observed values well beyond the general or typical value of a given variable. Multivariate outliers are cases with variable combinations that form atypical values. For example, in a data set that contained an age variable and an annual income variable, a 15-year old person, and a person that earned \$60,000 a year might not be outliers, in univariate terms. However, the combination of a 15-year old that earned \$60,000 would most likely be classified as a multivariate outlier. Given the 12,814 cases in the data set, both kinds of outliers were expected. As a result of the enormous sample size and a review of the diagnostics, no outliers were omitted in the data screening stage of the analysis.

Additionally, the distribution of the data is important. That is, variables with normal distributions (i.e., a bell-shaped curve) are ideal for use in regression analysis. Skewed distributions can inhibit the ability of predictor variables to produce statistically significant effects. Many of the variables analyzed in this data set produced substantially skewed distributions. In a skewed distribution, such as the sale prices of homes in most markets, the median is the best measure of central tendency. Hence, the frequently used term: Median home price. In this example, the sale prices of remarkably expensive homes pull the mean further to right of zero. As non-normal distributions are not ideal for regression analysis, variables are often transformed into normal distributions for use in regression analysis (Tabachnick & Fidell, 1996). In fact, this technique is quite common.

As techniques such as regression analysis are correlation-based, subtracting means from individual variable values lies at the heart of the process. If the mean is inflated by outliers or skewed distributions, the results of the regression analysis are more likely to contain bias. Transforming positively skewed variables, such as the ones found in this data set, into the natural log of their original values is a textbook procedure (Tabachnick & Fidell, 1996). In fact, this very transformation improved the skewness statistic for each variable in the model. Table 8 contains descriptive statistics for the variables used in the regression analysis. These statistics were produced after the natural log transformation. The Skewness and Kurtosis of a normal distribution are equal to zero, which is ideal for regression analysis. The Table 8 measures do vary from zero, but it is not a problematic variance. Prior to the transformation, the best Skewness and Kurtosis results were produced by the Minutes Played variable at 2.98 and 13.32, respectively. Cash Won and # of Inserts produced considerably worse results, when stated in their original form (See Table 1). The Table 1 levels indicated a non-normal distribution, hence the transformation.

Table 8
Descriptive Statistics: Post Log Transformation (n = 12,814)

Variable	Min.	Max.	Mean	SD	Skew.	Kurt.
# of Inserts	0.00	5.16	1.32	1.01	0.43	-0.41
Cash Won	0.00	10.54	6.21	1.94	-0.91	0.88
Minutes Played	0.00	7.97	4.51	1.40	-0.45	0.20

Finally, a correlation table was reviewed to identify and quantify the relationship between all pairs of continuous variables. Specifically, only the natural log of minutes played, number of insertions, and the cash won variables were included in the correlation table. The other variables, user group and win/loss, were both categorical or grouping variables, so Pearson Correlation Coefficients would be meaningless for them. Correlation tables identify the possibility of problematic relationships between predictor variables. That is, the inclusion of two variables that essentially explain the same variance in the minutes played variable would be redundant. This redundancy would introduce problematic bias into the solution, canceling the effect of both variables at the coefficient level. That is, knowledge of both variable values would not appear useful in attempts to explain

changes in the dependent variable. However, if one of the variables were removed from the model, the other would be become a significant predictor.

Table 9 contains the correlation matrix of the log-transformed variables. Both # of Insertions and Cash Won posted strong positive correlations with the dependent variable, Minutes Played. This was very encouraging. However, the correlation between Cash Won and # of Insertions (0.57) was moderate, which suggests a degree of redundancy. However, at this stage, both variables remained in the model, as the correlation was not judged to be problematic. It was something that could be further monitored as the analysis progressed.

Table 9
Correlation Matrix (n = 12,814)

	Minutes	Insertions	Cash Won
Minutes Played	--		
# of Insertions	0.69	--	
Cash Won	0.93	0.57	--

Table Note. All correlation coefficients were significant at the 0.01 alpha level.

Multiple Regression Results

When reviewing the results of the multiple regression analysis, it is important to remember that all model variables were transformed into the natural log of their original values. The model explained 90.3% of the variation in the natural log of minutes played (minutes played). The model F Statistic, 29,157, was statistically significant at the 0.01 alpha level. This simply indicates that at least one the model variables produced a statistically significant effect on the dependent variable, minutes played.

As shown in Table 10, all of the model variables produced a statistically significant effect at the .01 alpha level, with the exception of the key variable, User Group. However, User Group was significant at the .05 alpha level, indicating a strong statistical relationship with that of the dependent variable, minutes played. Notice the word simultaneous in the title of Table 10. This word indicates that the effects of all predictor variables on the dependent variable, minutes played, are computed after the effects of all other predictor variables have been computed. In effect, each variable enters the process last. This approach forces the coefficient to represent only the unique explanatory power of each predictor variable. This is an important detail when considering the effect of each variable.

Table 10
Summary of Simultaneous Regression Analysis for Variables
Predicting the Natural Log of Minutes Played (n = 12,589)

Variable & [Tolerance ^a]	B		SE B
Intercept	0.477		0.014
Number of Insertions [0.62]	0.313	**	0.005
Cash Won [0.63]	0.587	**	0.003
Win/Loss [0.98]	-0.263	**	0.013
User Group [0.87]	0.029	*	0.012

Notes. ^a Indicates the tolerance statistic.

** p < .01, one-tailed. * p < .05, one tailed.

The tolerance statistic (in brackets) represents the degree to which each predictor variable is correlated with the other predictor variables. To compute this statistic, each predictor serves as a dependent variable, with the remaining variables serving as predictor variables. The result is an R^2 value that represents the amount of variance in each predictor variable that is explained by the other predictors. From this point, each variable's tolerance statistic is computed by subtracting its R^2 value from 1.0. So, the lower the R^2 value, the greater the tolerance statistic. As previously mentioned, it is important to have predictor variables that are independent from each other. If not, bias will hide the true relationship between the predictors and the dependent variable. The tolerance statistics in Table 10 show no signs of problematic redundancy among the predictor variables.

When interpreting the effects of the individual predictor variables, it is crucial to remember that they are in the form of an elasticity, due to the natural log transformation. For example, a 1% increase in Number of Insertions produced a 31.3% increase in minutes played, and a 1% increase in Cash Won produced a 58.7% increase in minutes played. The categorical, or group, variables are interpreted a little differently than the first two predictors. That is, winners recorded 26.3% less minutes played than losers, where winners and losers were measured at the weekly level (i.e., winner = (cash out > cash in) = a value of 1). Finally, RG Users played 2.9% longer than those players who chose not to select any of the RG functions. This result is much less dramatic than that shown in the ANOVA (See Table 4). The effect of this grouping variable is subdued by the addition of the other three predictor variables. By including competing sources of influence on minutes played, the results of the regression analysis carry a stronger causal inference.

Multiple Regression Diagnostics

Despite the zero boundary associated with the dependent variable, minutes played, the residuals, or errors, produced by the regression analysis failed to indicate the presence of a curvilinear relationship or the presence of heteroscedasticity. Hetero is Greek for different and Scadastic is from the Greek word for variance. Heteroscedasticity simply means different variance, which is something that is not desirable in regression errors. This condition would indicate that the equation predicts the value of the dependent variable much better at low values than at high values, or vice versa.

The distribution of the regression errors must also be checked. In this case, the residuals were normally distributed, which is the desired result. Finally, the solution must be checked for outliers, which are extreme values capable of exerting an extraordinary influence on the solution. With a sample size in excess of 12,000, outliers are to be expected. Investigation of the outlier cases produced no conclusive evidence to refute their validity. As a result, no outliers were removed from the solution.

One theory related to the outlier cases is that many of them stem from card sharing. It would be useful to replicate this model and other analyses, after eliminating all cases resembling play that is usually high. The first step would be to run a partitioning algorithm to identify the existence of a subpopulation (e.g., shared cards). This subpopulation would be characterized by significantly greater weekly minutes played and cash-in values, among other indicators. Unfortunately, some problem and/or pathological gamblers may also be included in this subpopulation. In any case, the effect of RG use may produce a different effect on minutes played, within this revised population.

Multiple Regression Summary

Overall, the regression model explained 90.3% of the variation in the natural log of the minutes played variable. The minutes played variable originally represented the number of minutes played per card, per week. With regard to the effect of user group membership on the minutes played variable, RG users played 2.9% more than non-users. Put another way, the cards that used the RG features were associated with longer play than the cards where RG features were not used. This estimate was computed after accounting for the effects of the other three predictor variables.

Part IV: Concluding Thoughts and Recommendations

In this instance, as with so many others, this “research problem” resembles a case in front of a judge more than it resembles a mathematical equation – in that rather than arriving upon an air-tight “answer,” we are forced to weigh evidence as best as we can, given the limitations placed upon us. Over the course of the past year, the International Gaming Institute research team has weighed the available evidence from previous studies as well as our own primary research on the Nova Scotia RGD. What follows is a summary of our conclusions and recommendations for the Nova Scotia jurisdiction, and concluding thoughts pertaining to responsible gaming technologies more generally.

NCPG’s “PETER” Framework

Keith Whyte, executive director of the National Council on Problem Gambling, often invokes a useful acronym when asked the all-important “so, what do we *do* about problem gambling?” question by policymakers. The acronym “PETER” captures in a comprehensive fashion the areas that need to be addressed in any attempt to construct a thorough and effective responsible gaming policy. The letters in PETER stand for:

Prevention: policies should be implemented to protect populations from increased harm.

Education: educational programs should focus on informed choice, appropriate employee training, and public education.

Treatment: for the severest cases, a “continuum of care” should be provided to help those in dire need of immediate and skilled assistance.

Enforcement: effective regulation has effectively addressed many costs commonly associated with gambling (e.g., mafia influence), and can help provide a strong set of guidelines for operators and regulators to follow.

Research: perhaps most importantly, research should link together and test policies designed to address all of these other elements.

In a global context, most governments have developed programs that only address one or two elements of the PETER model. Notably, Nova Scotia and many other Canadian jurisdictions have done a thorough job of developing programs that taken together constitute comprehensive “safety nets.” After reviewing the existing literature on responsible gaming technologies and the qualitative and quantitative data on the Nova Scotia test phases, we are of a mind that this device would be most effective for the first two “PE” components (prevention and education).

Ultimately, it seems that the device’s most powerful applications might be found with those who are at-risk, and hence might be prevented (“P”) from developing more severe problems. In fact, we believe that prevention is so important (and ultimately, so cost-effective) that this potential alone merits further examination and implementation of these sorts of devices.

In the educational (“E”) area, while the elements in the current device are of minimal educational value, we believe that there is strong potential for this to be addressed more thoroughly in future versions, and strongly recommend the incorporation of additional educational information into this device in the future (see next section). At the very least, it is hard to argue *against* the provision of increased education about problem gambling – a poorly-understood public health challenge – and having the option in a variety of settings (including in machines) to learn more about it seems prudent.

Clearly, these are not treatment (“T”) mechanisms – treatment, as we have emphasized, should be conducted by treatment professionals. While this device may certainly provide tools for problem gamblers (in addition to those with less severe statuses), we are of a mind that this device should be seen as a potentially useful tool for prevention, rather than as an interventionist tool for those in need of treatment.

The device could be used in conjunction with other programs on the casino floor in an effort to provide a sensitive but strong enforcement (“E”) of problem gambling programs. As we have mentioned, the exclusion features in the device should be synchronized with any broader self-exclusion measures in place in the jurisdiction. It is very important to emphasize that these self-exclusion measures should focus on linking those in need with appropriate and skilled clinical services.

Finally, research (“R”) will continue to be vital as we attempt to evaluate each of these other elements. As we have mentioned, due to analytical limitations created by card sharing, much of the quantitative work we would have liked to see – for instance, the tracking of individual players over time, to see if their behaviors change in any measurable way – could not be conducted here. In the future, we will need to continue to be vigilant in our monitoring of these types of products, keeping in mind the potential for unintended negative consequences as well as the potential benefits of these sorts of devices (Bernhard & Preston, 2004).

The Reno Model Revisited

Another important conclusion and recommendation pertains to the improvement of the offerings associated with the RGD. Recall that one emphasis of the Reno Model is the linkage of responsible gaming features with “qualified clinical services.” One concern of the research team is that the RGD studied here lacks this linkage. As it stands now, the RGD provides only basic information on responsible gaming at the beginning of the session. In our opinion, this represents a missed opportunity.

Hence, one recommendation is that in the future, the RGD could benefit from more detailed information screens (available whenever the gambler chooses to access them) that at the very least include help line information so that patrons may be informed of the availability of appropriate clinical services. These need not necessarily be forced upon the patron, but players should be able to access this responsible gaming information if they so choose. Further screens could be sensitively constructed and provide information

on warning signs for pathological gambling, the odds associated with gambling, and the nature of probability.

More sophisticated and comprehensive responsible gaming programs could provide more direct linkages throughout the property, perhaps at informational kiosks such as those currently operating in Manitoba. Streamlined communication throughout the gaming location is crucial; for instance, those accessing the self-exclusion features on the RGD (e.g., the 48-hour stop feature, or the calendar) should be informed about appropriate self-exclusion programs that are property- or jurisdiction-wide. These efforts should be coordinated with the existing self-exclusion programs and monitored via research.

Specific RG Features

Clearly, the “accounting” features (“My Account” and “Live Action”) were the most popular in both the qualitative and the quantitative analyses. A diverse range of gamblers appreciated the ability to find out how much money had been won or lost over a given period of time, and indeed, found it difficult to find any arguments *against* having this information available. These features were deemed particularly useful with non-problematic gamblers (though we should emphasize, this could not be determined via quantitative analysis), who taken together constitute the vast majority of the gambling population. Already available in other gambling settings (such as with online gambling, or with loyalty cards), this feature represents an advance in convenience.

However, just because the other “limit” features were used less frequently does not necessarily mean that they should be jettisoned. It could simply be that these features are more suited for the (rarer) problematic and at-risk players. Just as no one would argue that a fire extinguisher should be tossed aside because it is “rarely used,” future research should explore whether these features are more appropriate for dire situations, as it appears to us they may be. If this is in fact so, these features should not be rejected simply because they are used less often. Furthermore, to maximize the utility of these “limit” features, they could well be used in conjunction with self-exclusion programs or other educational programs in the gambling property.

The Difficulty of Diagnosis

Since the earliest days of the pathological gambling field, a search has been underway for a “magic algorithm” that could determine (through a complex calculation based on gamblers’ play) who was gambling problematically and who was not. This pursuit is of profound relevance to those interested in RGDs because this represents a task that RGDs potentially could be called upon to do – should we be confident that this was possible. In this section, we will review these possibilities, and critique the assumptions inherent in making these sorts of arguments.

To those who would want responsible gaming devices “doing more” – i.e., having the machine track play and then “diagnose” a problem gambler based upon his/her wagers, a few considerations need to be taken into account. To review, the DSM-IV lists ten

diagnostic criteria for pathological gambling. Five of these criteria need to be met for a diagnosis to be “achieved.” Simply stated, the ten criteria consist of the following:

- 1) Preoccupation (excessive thinking about gambling or getting money to gamble)
- 2) Tolerance (feeling a need to gamble increasingly to achieve a desired state)
- 3) Loss of control (an inability to quit gambling despite repeated attempts)
- 4) Irritability/restlessness (when attempting to stop gambling, growing restless/irritable)
- 5) Escape (gambling to escape from problems)
- 6) Chasing losses (after losing, “chasing” those losses by attempting to “win back” those losses with further gambling)
- 7) Lying (to cover up gambling activity)
- 8) Criminal acts (to support gambling activity)
- 9) Family/work problems (due to gambling activity)
- 10) Financial bailouts from others (to alleviate financial pressures due to gambling activity)

Source: American Psychiatric Association (1994)

Certainly the centrality, importance, and value of the DSM are debatable – and vigorously debated. However, it is notable that virtually none of these criteria (in fact, we will argue that not a single one of these) are currently identifiable based upon some calculation made at the machine. In fact, it would seem that virtually all of these would be “invisible” to the gaming machine (indeed, many of these can be challenging to identify even for trained mental health professionals).

To the degree that it has been suggested that any of these criteria can be detected via a mathematical calculation, the two criteria that are often deemed “visible” are chasing losses and (usually to a lesser degree) tolerance. Assuming for a moment that our diagnostic detection abilities were such that we were confident that these two criteria could be accurately detected at the machine, this would still represent only two-fifths of a diagnosis – three other criteria would still have to be met for pathological gambling to be “officially” diagnosed.

However, a closer examination of these criteria indicate that achieving a proper diagnosis of even these two criteria might be overly optimistic. Chasing behavior ostensibly is tracked via machines by observing whether gamblers wager more money after they lose money. Even if we are able to do this, though, a major (and invisible) step is missed: we still do not know whether the gambler has gambled more money after a loss *in order to win back losses*. It could be, after all, that these betting patterns are taking place for other reasons rather than to “win back” a previous loss (a loss that the patron may or may not recall). This important cognitive step needs to be probed – ideally, we believe, by a trained mental health professional.

A similar concern arises when contemplating the “diagnosability” of tolerance – a perceived need to gamble more where less used to do the trick. Once more, simply observing frequency patterns – a gambler gambling more over time, for instance – is

insufficient. For a proper diagnosis, we also need to *demonstrate* that the gambler is doing this because of a felt or experienced “need.” To use an alcohol analogy, seeing an individual increasing his drinking intake alone does not necessarily mean that we have seen him display tolerance; we need to see him do this *to get to the same “place” that he used to get to with less*. Put simply, our concerns with the “diagnosability” of this problem in this environment might be summed up as follows: given our current state of knowledge, we cannot equate *frequency* with *pathology*.

A further concern even if these behaviors were “diagnosed” are unintended consequences – how would patrons who are misdiagnosed (or even properly diagnosed) react to such a diagnosis? How could we be sure that this sensitive moment was indeed handled sensitively, appropriately, and effectively? To our knowledge, these questions are central, and they have not as yet been adequately addressed.

As such, we would argue that the machine is not at this stage an ideal environment to *diagnose* a pathological gambler (at least as it can be done via the DSM), and as such, responsible gaming efforts should focus on other ways in which the device might provide tools for responsible gaming. Ideally, diagnosis and treatment are to be done by professionals – machines can provide some tools for responsible gambling, but as the field currently stands, gaming machines are not diagnostic machines (as exists, for examples, with health problems from heart disease to brain tumors).

Of course, some would argue that whatever the complications inherent in detecting patterns that *might* indicate which gamblers *might* have a gambling problem, the potential benefits to those with problems are such that this is a worthwhile pursuit despite the complications. And indeed, should this “magic algorithm” be discovered and then presented in the peer-reviewed literature, it would potentially represent a significant leap forward. Furthermore, algorithms that are independent of the DSM and its components could also be developed in the future. However, at this stage, because of our concerns with unintended consequences, and based upon the existing publicly available and peer-reviewed literature, we cannot endorse these types of features in RGDs.

Recommended Philosophy and Applications

Related to the points introduced above (and throughout this piece), it is our belief that the philosophy behind the provision of RGDs should continue to be “tools” oriented rather than oriented towards diagnosis or intervention (both of which are complex tasks best done by mental health professionals). The recommended approach, then, is one that provides tools for responsible gambling, rather than one that emphasizes diagnosing (or treating) problem gambling. While more aggressive interventions may someday be possible, it is our belief that today, based upon current knowledge and research, this hope is overly optimistic.

More generally, it is our recommendation that this RGD policy should serve as a useful component of a broader and comprehensive responsible gaming program – as one tool in the toolbox, rather than a solution to the complex problems that problem gamblers face.

Another vital consideration -- potentially as important as any articulated in the research presented here but so often neglected in problem gambling research -- is anthropological in nature. To be sure, an emphasis on research-based “best practices” is one that we can all endorse, but we need to do so with an important caveat: that which has been “empirically supported” in one location should not then be uncritically exported to another.

Simply demonstrating that a certain approach works in one gaming jurisdiction (and hence, one socio-cultural setting) is insufficient if it is assumed that this implies that the policy will automatically work elsewhere. Though the analogy oversimplifies things somewhat, we must keep in mind that in contrast to cancer research, one cannot assume that a problem gambling treatment program that works in North America will work with those suffering in Southern Africa. Similarly, a responsible gaming training program that works with those who sell lottery tickets in Canada may not work well with those who deal Pai Gow on a casino floor in Macao.

Too frequently, responsible gaming efforts have been plagued by a relative lack of attention to culture. For instance, even if “best practices” research supports the use of help lines (whereby problem gamblers and family members can talk to a trained professional about their problems), in cultures where this sort of “reaching out” to strangers or mental health professionals is discouraged, these programs could well fail. Rather than only trusting “research,” then, we need to be sure to include *local* research – informed by socio-cultural and governmental nuance – wherever and whenever possible (Lee, Lee, Bernhard, & Yoon 2006, Bernhard, 2007).

As it pertains to this research project, there are certain jurisdictions – Singapore comes immediately to mind – in which greater impositions on “privacy” or “personal freedoms” may be tolerated because these are commonly or culturally accepted aspects of everyday life. Policies that might be considered harsh or invasive in some settings may be acceptable or even welcomed by the general public in other areas.

In this spirit, based upon our research on this product in the United States and Canada, it is the opinion of this research team that in these two countries, responsible gaming policies that patrons may opt into – rather than those that employ forced limits or other mandatory policies – are generally going to be better received by both the gambling and non-gambling public.

As always, we need to pay close attention to unintended consequences when examining systems such as these (Bernhard & Preston, 2004). In the Michael Crichton novel *Jurassic Park*, a scientist-protagonist remarks, upon observing that animals on the island has evolved in unimaginable fashion, that “life will find a way.” We might suggest that in the same sense, gamblers will very often “find a way” to beat the systems placed in front of them (in fact, one might argue that many gambling games entail a “figuring out and beating the system,” at least to those who play them). Because of this tendency, it

was probably reasonable to expect that the Nova Scotia gamblers would be able to find strategies to get around this responsible gaming system.

In this instance, it appears that the most glaring example of gamblers “beating” the RGD was through substantial card sharing. While this is perhaps to be expected, this reality does render many of our research tools impotent, and we should pursue measures to address this problem. In the future, it may be that biometric devices, such as fingerprint technology (requiring, for instance, a thumbprint to start play) or facial recognition technology (requiring a facial scan to start play) could take care of many of these challenges (in that they could eliminate the step where an identification card is needed).

Of course, as is often the case, solving one challenge leads to new ones – chief among them, perhaps, different kinds of concerns with privacy and security. For the time being, we recommend that a task force consisting of gamblers, policymakers, researchers, and gaming operators convene to discuss steps that can be taken to address card-sharing – the primary hurdle to determining the specific effects that these devices had on specific gamblers.

On a more technical level, responsible gaming features cannot be thoroughly taken advantage of if they are not visible. Participants suggested that as it is currently configured, the device would be especially difficult for those with poor eyesight, and perhaps for older adults. Many of the participants in the focus groups sought larger screens, or at least larger fonts. In the future, we recommend that all of these features might be incorporated directly into the gaming machine (rather than incorporated into a separate RGD attached to the gaming machine.) This not only would enhance usability, it would also further allow those who do not choose to use these features to ignore them, while placing few burdens on those who do.

Of course, there is no “one size fits all” solution to any of the challenges associated with gambling problems. However, in Nova Scotia, the research presented here leads us to recommend the incorporation of this RGD technology as a “cog in the responsible gambling machine” – as a part of a broad and comprehensive responsible gaming policy. While we have some concerns about unintended consequences, we are not of a mind that these are so substantial as to block further implementation and monitoring of these devices.

When we recall that the objective of the Nova Scotia Gaming Corporation was to encourage responsible gambling behaviors, rather than to “solve” gambling problem, it becomes clearer that this device succeeds. Based upon the quantitative evidence we have, it is clear that these features are relatively popular – and especially with heavier gamblers. Future research should explore the relationships between the heavy play associated with RG feature usage, with a special focus on any causal or temporal inferences that can be made (for instance, whether the heavy play or the RGD play “comes first” in the chicken-and-egg equation). As always (and as per Nova Scotia’s tradition), we need to engage in ongoing – and ideally longitudinal – research to evaluate efficacy with gamblers, further unintended consequences, and business impacts. We

have identified a series of patterns that give us reason for optimism; however, we cannot at this stage state that specific responsible gaming policies *caused* any specific behavioral changes. This is true of many research fields, however, as causality is often a “gold standard” that is very rarely achieved (in any health field) without years of longitudinal research.

In the future, one research strategy that would more definitively establish causal relationships would be the empanelling of a large number of gamblers to track their “gambling careers” and interactions with these devices over time. As is the case with so many health problems from proper diet to heart disease risk, only by following and monitoring a large number of specific individuals for a relatively long period of time can we definitively state that some stimulus (in this case, a responsible gaming device) *caused* some behavior (an increase in responsible gambling behavior, for instance). Usually and unfortunately, this kind of research pursuit is often prohibitively expensive.

Hence, given our best inferences from the best available evidence, we are of a mind that Nova Scotia should proceed with further implementation (and testing) of this device. At the end of the day, like the strong majority of participants in our focus groups, our inclination is to give this technology a “thumbs up” overall – but with the (always-present) caveat that it be accompanied by ongoing thorough and systematic research to determine the dynamics of its efficacy. Given the Nova Scotia Gaming Corporation’s stated desire to promote responsible gambling behaviors, it would seem that this device provides a powerful “tool in the tool chest” for those players seeking to do exactly that.

Postscript

In the acclaimed documentary *In the Fog of War*, former U.S. Secretary of Defense Robert McNamara expresses a series of deeply thoughtful laments in lengthy interviews. As one of the most important leaders of a cabinet that stared down planetary destruction on more than one occasion during the Kennedy administration, McNamara's words often provide a somber warning about the perils we face.

On one occasion, however, McNamara's face brightens. His account of his years as an executive with Ford Motors in the post-World War II era (an era of dramatic growth for Ford) was notable for one development of which he is clearly quite proud. In speaking of his time at Ford, he recalls that this was a time when they were beginning to understand that a relatively small percentage of customers were getting injured while using their product. When we look back at this era, the issues were no doubt complex and challenging; though the percentage was small, the potential damage was substantial, and though the "fault" was difficult to discern (on occasion the driver was clearly to blame, and on occasion the company was), it was clear to him that something needed to be done.

Faced with this, McNamara decided to commit to an aggressive policy that resulted in the development of safety belts, and at the end of a long life, this is what makes McNamara proud – he recognized that there were some who were hurt during their interactions with his product, and he committed to researching and acting.

Though the metaphor is clearly an imperfect one, it may not be overly dramatic to say that we are faced with a similar moment in the history of the gambling "product." Nor may it be overly optimistic to hope that we too, when looking back upon our careers years from now, can be proud of the ways that we responded to this moment, and the ways in which research and action assisted in this process.

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APPENDIX A: FOCUS GROUP GUIDE

NOTE: *While the topic areas covered in this guide were all discussed in each focus group, it is important to note that focus groups are dynamic, and do not follow a step-by-step script as survey questionnaires do. As such, these questions were not necessarily read verbatim, nor were they necessarily read in the order provided here.*

Welcome (SELF INTRODUCTION). To remind you, in the consent form that you signed, we informed you that your participation in this forum is completely voluntary – you may stop your participation at any time. We also wish to emphasize that all responses will be kept confidential – your name will never be linked with your responses. Should you have any questions about research procedures, please feel free to ask at any time.

We want your honest opinions and reactions to this device – positive or negative. We at UNLV are not selling this device, we are simply evaluating it.

We also wish to emphasize that this is an issue of increasing international importance, and that you take this assignment that seriously. We want everyone’s honest opinions about this device, so we would like to encourage everyone at this table to get involved in the discussions, and to express yourself freely.

First of all, we are going to go around the table and introduce ourselves (first name only, please) and talk a little bit about our gambling history. You do not have to reveal anything that you are uncomfortable revealing – we just want to get to know you and your gambling behaviors.

A few words about your gambling habits? What is your favorite gambling game?

Now, we are going to discuss some of the features in the device that was just demonstrated for you.

(First discussion: “My account” feature)

Overall, what do you think that the effects of this feature would be?

What do you think the positive effects would be? What do you think the negative effects would be?

Do you think that this feature might help normal gamblers? Might it interfere with their gambling experience in any way?

Do you think that this feature might help problem gamblers?

Do you think that this feature may help those who are developing a problem?

Do you think that gamblers may outsmart this feature? How?

Do you think that this feature is a useful one? Do you think that it should be used in gaming jurisdictions?

Are there any unintended consequences that you can think of that might result from using this feature?

DISCUSS LIVE ACTION FEATURE (*this* machine, this time period)

Overall, what do you think that the effects of this feature would be?

What do you think the positive effects would be? What do you think the negative effects would be?

(Second demonstration: "My money limit" feature)

Overall, what do you think that the effects of this feature would be?

What do you think the positive effects would be? What do you think the negative effects would be?

Do you think that this feature might help normal gamblers? Might it interfere with their gambling experience in any way?

Do you think that this feature might help problem gamblers?

Do you think that this feature may help those who are developing a problem?

Do you think that gamblers may outsmart this feature? How might they do that?

Do you think that this feature is a useful one? Do you think that it should be used in gaming jurisdictions?

Are there any unintended consequences that you can think of that might result from using this feature?

(Third demonstration: “My play limit” feature)

Overall, what do you think that the effects of this feature would be?

What do you think the positive effects would be? What do you think the negative effects would be?

Do you think that this feature might help normal gamblers? Might it interfere with their gambling experience in any way?

Do you think that this feature might help problem gamblers?

Do you think that this feature may help those who are developing a problem?

Do you think that gamblers may outsmart this feature? How?

Do you think that this feature is a useful one? Do you think that it should be used in gaming jurisdictions?

Are there any unintended consequences that you can think of that might result from using this feature?

DISCUSS 48 HOUR STOP FEATURE (self-exclude for 48 hours – a cooling off period)

Overall, what do you think that the effects of this feature would be?

What do you think the positive effects would be? What do you think the negative effects would be?

(After all features are discussed)

What role do you think that the government should play in helping those with gambling problems? What role should operators play? What role should gamblers themselves play?

If you were speaking directly to those who make policy decisions about gambling, what would you tell them? Are there any other features that you think might be particularly effective? Are there any that would be particularly ineffective?

Are the features easy to understand?

Are there privacy concerns that you would have with any of these features? Are there any freedom of choice issues that concern you?

How would you feel about the use of biometric technology rather than card-based technology?

Are problem gambling concerns more important than concerns about responsible (healthy) gambling? In other words, are you concerned that these features could interfere with the gambling experience of those without any gambling problems?

Do you think that there may be problems with identity fraud or a black market for phony cards?

Do you think that people may use someone else's card and PIN number?

Do you think that this imposes an unfair cost upon the operator? What impacts do you believe this will have on the gaming industry?

Thank you for your time. You will be provided with a list of resources for problem gambling services should you have any concerns about you or someone close to you. If you have any questions about this research now or in the future, the contact information for the research team will be provided. Your gift certificate can be picked up at the administration desk at the front of the building.