Some definitions

- **Epidemiology** is the study of the distribution and determinants of health-events in populations.
- **Prevalence** refers to the percentage or number of people who have an illness or disorder at one point in time.
- **Incidence** refers to the percentage or number of people who develop a problem over a given period of time (“new cases”).

Abbott et al., 2004; Wikipedia, 2012

The changing face of problem gambling

- Early population surveys in numerous jurisdictions identified the following risk factors:
  - Male gender
  - Age under 30
  - Low income
  - Single marital status
  - Low occupational status
  - Less formal education
  - Residing in large cities
- "Feminization of problem gambling"
- "Bimodal groups"
  - African Americans in US
  - Pacific Islanders in New Zealand
  - Eastern European immigrants in Sweden

Abbott et al., 2004; Productivity Commission, 1999
Exposure vs. adaptation: Framing the issue

- Is the relationship between exposure and harm a straightforward one?
- Does the "total consumption/single distribution" model apply to gambling?
- Relevant in other areas of public health
  - Alcohol & tobacco consumption
  - Obesity
  - High blood pressure
- Researchers have proposed a modified formulation that includes both exposure & adaptation

Abott, 2004; LaPlante & Shaffer, 2007; Lund, 2008; Orford, 2005; Shaffer, 2005

Exposure: The single distribution model

Adaptation: The epidemiologic curve
Standardization study

- Comprehensive compilation of all published & unpublished studies that have included a jurisdiction-wide adult prevalence survey
- Prevalence rates were standardized to facilitate comparison of rates between jurisdictions & within same jurisdiction over time
- Enabled analysis of changes in standardized PG prevalence rates over time

Williams, Volberg & Stevens, 2012

Data & methods

- 202 studies extracted
  - 68 national
  - 27 Australian states/territories
  - 40 Canadian provinces
  - 67 U.S. states
- Five primary methodological variants for which weights were developed & applied
  - Differences in PG assessment instrument & differing thresholds to designate PG for the same instrument
  - Differences in time frame used to assess PG
  - Differences in method of survey administration
  - Differences in how survey is described to potential participants
  - Differences in the threshold for administering PG questions
  - Differences in response rates over time, administration method
- Did not correct for differences in sampling strategy, weighting of survey data

Williams, Volberg & Stevens, 2012

Changes w/in jurisdictions over time

![Graph showing changes in standardized PG prevalence rates over time for different jurisdictions.](image)
Findings

- PG rates started increasing in North America & Australia in late 1980s/early 1990s
- Rates peaked in late 1990s/early 2000s
- Period roughly coincident with rapid intro & expansion of EGMs & casinos
- General downward trend in PG rates starting in late 1990s (North America)/early 2000s (Australia, Nations)
- Early studies carried out coincident with/shortly after intro of new forms
  - Very few true 'baseline' studies

Conclusions

- Results support both exposure & adaptation
- Adaptation can occur at different levels
  - Individual (recovery, professional intervention)
  - Community (novelty wears off, increased awareness of risks)
  - Population ("natural selection" & removal of unsuccessful gamblers)
- Different levels of adaptation suggest distinct policy approaches
  - Prevention, early intervention more beneficial at individual, community level
  - Policy, regulatory measures to limit/reduce density & concentration more helpful at population level

Prevalence surveys provide 'snapshots' of a dynamic process

[Diagram showing inflow/outflow of gambling cases with stages of gambling problems and treatment]

Williams, Volberg & Stevens, 2012
### Growing number of longitudinal studies conducted internationally

<table>
<thead>
<tr>
<th>Study Population</th>
<th>Waves</th>
<th>Jurisdiction</th>
<th>Researchers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children</td>
<td>2</td>
<td>Canada</td>
<td>Pagani, Derevensky &amp; Japel, 2009</td>
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<tr>
<td>Adolescents &amp; parents</td>
<td>2</td>
<td>Canada</td>
<td>Danz et al., 2008</td>
</tr>
<tr>
<td>Adolescents</td>
<td>6</td>
<td>United States</td>
<td>Barnes et al.</td>
</tr>
<tr>
<td>Adolescents</td>
<td>6</td>
<td>Montreal</td>
<td>Vitaro et al.</td>
</tr>
<tr>
<td>Young adults</td>
<td>2</td>
<td>Canada ADHD study</td>
<td>Breyer et al., 2009</td>
</tr>
<tr>
<td>Young adults</td>
<td>2</td>
<td>Dunedin cohort</td>
<td>Stanton et al., 2015</td>
</tr>
<tr>
<td>Young adults</td>
<td>3</td>
<td>Minnesota</td>
<td>Winters et al., 2002, 2005</td>
</tr>
<tr>
<td>Young adults</td>
<td>4</td>
<td>Australia</td>
<td>Delfabbro, Winefield &amp; Anderson, 2009</td>
</tr>
<tr>
<td>College – young adult</td>
<td>4</td>
<td>Midwest US</td>
<td>Slutske, Jackson &amp; Sher, 2003</td>
</tr>
<tr>
<td>College – young adult</td>
<td>4</td>
<td>Midwest US (1 gambling item)</td>
<td>Gauntlett et al., 2009</td>
</tr>
<tr>
<td>Young adults</td>
<td>6</td>
<td>Australia health study</td>
<td>Hayatbakhsh et al., 2006</td>
</tr>
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</table>

### Special populations

<table>
<thead>
<tr>
<th>Study Population</th>
<th>Waves</th>
<th>Jurisdiction</th>
<th>Researchers</th>
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</thead>
<tbody>
<tr>
<td>Regular EGM players</td>
<td>6</td>
<td>Australia</td>
<td>Dickerson, Haw &amp; Shepherd, 2003</td>
</tr>
<tr>
<td>At-risk &amp; help-seeking gamblers</td>
<td>5</td>
<td>Canada</td>
<td>Wiebe et al., 2009</td>
</tr>
<tr>
<td>Scratchcard players</td>
<td>2</td>
<td>Netherlands</td>
<td>DeFuentes-Herreras et al., 2004</td>
</tr>
<tr>
<td>Regular VLT players</td>
<td>2</td>
<td>Nova Scotia</td>
<td>Schmans, Schellinck &amp; Walsh, 2005</td>
</tr>
<tr>
<td>Casino employees</td>
<td>3</td>
<td>United States</td>
<td>Shafer &amp; Hall, 2002</td>
</tr>
</tbody>
</table>

### Adult studies

<table>
<thead>
<tr>
<th>Study Population</th>
<th>Waves</th>
<th>Jurisdiction</th>
<th>Researchers</th>
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<tbody>
<tr>
<td>Adults</td>
<td>2</td>
<td>Ontario</td>
<td>Wakte et al., 2003a, 2003b</td>
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<tr>
<td>Adults</td>
<td>2</td>
<td>New Zealand</td>
<td>Abbott, Williams &amp; Vohberg, 2004</td>
</tr>
<tr>
<td>Older low-income adults</td>
<td>3</td>
<td>United States</td>
<td>Vander Bilt et al., 2004</td>
</tr>
<tr>
<td>Adults</td>
<td>4</td>
<td>Alberta LILP</td>
<td>el-Guabbaly et al. (analysis underway)</td>
</tr>
<tr>
<td>Adults</td>
<td>5</td>
<td>Ontario QMIB</td>
<td>Williams et al. (analysis underway)</td>
</tr>
</tbody>
</table>
Adult studies underway

Along with New Zealand …
- Started with large samples of adults 18+
- Substantial overlap in content of questionnaires to allow cross-cultural comparisons in future
  - Demographics
  - Gambling participation
  - Problem gambling (OPGI)
  - Lifetime problem gambling
  - Physical & mental health
  - Alcohol, smoking
  - Life events
  - Social capital
  - Help seeking
- Designed to assess incidence for the first time
- All participants in baseline who agreed to be re-contacted were followed up one year later

PG status can change over time

Victoria Department of Justice, 2011
Risk factors predicting PG development

- Gambling in the past year on EGMs, casino table games, Internet
- Betting weekly on horse/dog races
- Poor health (physical, mental)
- Smoking
- Risky drinking habits
- Difficulties at work
- Changes in working conditions
- Loss of a close relative
- Changes in personal/HH finances

Swedish National Institute for Public Health, 2012;
Victoria Department of Justice, 2011

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