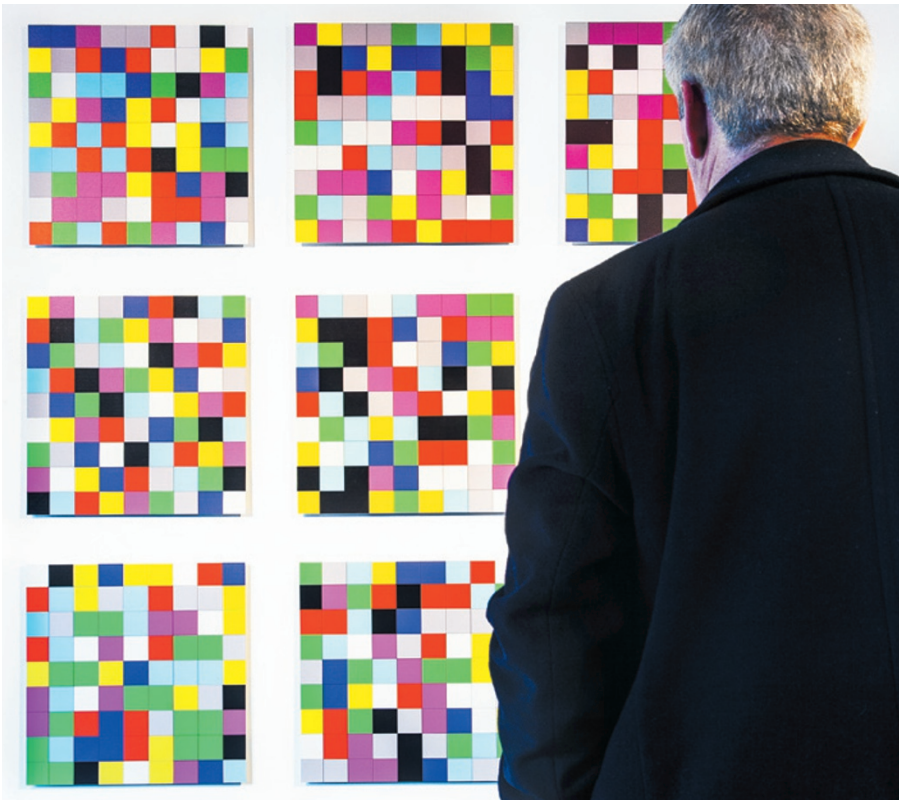

FREDDIE STEVENS

Totally Random? **by David Spiegelhalter and Mike Pearson challenges the viewer to find a pattern.**

STATISTICS

Charting chance

Anthony King tries his luck at a casino that lays bare the psychology of risk-taking.

Risk is a constant in our lives, permeating everything from allowing your child to walk to school alone to snowboarding late in the season. *Risk Lab*, the new exhibition at Dublin's ever-inventive Science Gallery, offers ample opportunities to explore this nexus of psychology and statistics.

Enter the exhibition's geeked-up casino and venture into the world of scientific gambling, with gallery staff on hand to help with the maths. Downstairs, you can puzzle out probabilities by playing roulette and poker or taking in themed artworks, such as one that challenges you to spot a non-random pattern among nine pictures of coloured squares. Upstairs, computers mocked up as slot machines offer psychological tests in a variety of activities that feature a large element of risk.

A central message in *Risk Lab* is that most of us use gut feelings rather than cerebral churning to do the sums when assessing risk. As Science Gallery events manager Ian Brunswick points out, intuition is generally plan A. "Humans are terrible at understanding statistics and evaluating risk and chance," he says. Superstar statisticians can evaluate risks in elections, baseball, financial crashes and poker, but their analyses involve wading through banks of data. Most people paddle at the margins, says one of the exhibition's curators, David Spiegelhalter, who studies the public's understanding of risk at the University of Cambridge, UK. Emotions do the rest: a psychological aversion to flying often leads people to rate air travel as high-risk, even when they know that it is statistically much safer than driving.

RISK LAB
SCIENCE GALLERY, DUBLIN
Dublin, Ireland. Until 23 June

The prime role of emotion in assessing and taking risks is shown by a strap-on biosensor device that you can wear while playing poker and which measures stress indicators such as sweat and heart rate. A poker face won't work here: physiological measurements are displayed for all to see in the form of a chair tottering off a diving board on a TV screen. "We are trying to explore both sides of risk: the cool, rational side, and how we feel about it," says Spiegelhalter.

Daniel Kahneman's book *Thinking, Fast and Slow* (Farrar, Straus and Giroux, 2011) was a major inspiration for *Risk Lab*, says gallery director Michael John Gorman. In this work, the Nobel-prizewinning economist demonstrates that powerful emotions make us overestimate the probabilities of events that have minuscule odds, such as terrorist attacks. "There's the basic question of why people are more frightened of sharks than diabetes," says Gorman. "We are trying to get to people's instinctive fears."

On the one-armed bandits, visitors can participate in five psychology experiments that pose ethical, practical and monetary conundrums. Particularly resonant in our era of potential pandemics is the exhibition's *Risky Rights and Wrongs*, a classic psychology experiment set up by Mary Parkinson and Ruth Byrne of Trinity College Dublin, which probes the moral implications of public-health choices. Visitors observe 'John', a protagonist confronted with two different options for combating an influenza-like disease — one that will definitely save some lives, and a second that has a chance of saving more lives but runs the risk of saving no lives and for which probabilities are provided. The experiment has two versions, which differ in how the options are worded, but give the same probabilities for saving or losing lives.

When participants are asked to try to save lives, they tend to be risk-averse and choose the definite option; when the options are rephrased and they are asked to prevent lives being lost, they choose the probabilities. This experiment investigates how people assess the morality of the risky choices of others. Subtle changes in word choice that alter the way a situation is framed can catch us out.

Another slot-machine study, *Price Your Vice*, explores whether people are more impulsive with their money or their vices, such as drinking and smoking, and ignore the future to live in the present. Visitors are offered various options to accept or delay rewards, but unbeknown to them, their mouse movements are tracked to gauge their certainty as they choose. "Distorted decision-making kills more people than anything else in the world," says Denis O'Hora, a psychologist involved in this study at the National University of Ireland, Galway. Heart disease, respiratory disease, liver disease, strokes and cancer all have behavioural components.

Risk Lab takes nothing from you but time, and freely provides a stack of everyday statistics and psychology lessons. You can't lose. ■

Anthony King *is a writer based in Dublin.*
e-mail: anthonyjking@gmail.com