

Exploristica - Adventures in Statistics: a new itinerant exhibition for teaching and learning Statistics

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Exploristica - Adventures in Statistics - is a new itinerant exhibition designed to teach the fundamentals and practice of Statistics and Probability intended for students of upper basic and secondary school (12 to 17 years). Describing five important phases of the statistical process - Select, Collect, Describe, Estimate and Interpret –Exploristica, is organized in several modules that present the main statistical concepts in the form of games and other interactive experiences. The main concepts to be taught are the types of data, location and dispersion measures (mean, median, standard deviation), graphs (box and whiskers, bar plots, histograms), random and non-random sampling, relative frequency, and probability. In this talk, we aim at presenting the several games and activities as well as the main statistical concepts transmitted to students.

Each participant uses a sheet, the explorer sheet, mounted on a board, where it is possible to collect information, writing notes and drawing conclusions, as requested as long as they go through the various modules of the exhibition. There are six modules (i) In the Welcome module participants introduce their data and produce graphs and tables and discuss the main results. (ii) in Archery, players use a real bow to shoot arrows at the target and use distances to the target center in order to learn the concepts of location and dispersion. (iii) inside the Submarine, participants perform a journey through an underwater ecosystem where they need to collect a sample of a new species of reptile. Then they produce box and whiskers plots of the data, to help determining the subspecies of the reptile; (iv) the Census Quizz is a set of questions, based on Portuguese Census 2011 data, which players have to answer in the fashion of “Who wants to be a millionaire”. (v) in False Dice, participants use four dice, which they roll to discover which of them are fake. (vi) Sampling is a game that uses the big gorilla Conga, to help collecting a non random sample of the inhabitants of the city and compare it with a random sample in order to estimate the proportion of voters in D. Stimacione. Games are complemented by posters that reflect some practical applications of the concepts presented in a playful way: in industry, medicine, etc. Exploristica is a project of SPE (The Portuguese Society of Statistics) supported by Ciencia Viva.

Key Words: teaching of statistics, descriptive measures, sampling, games