OUTCOMES:
Statistically literate adults should be able to: (1) read and interpret the use of statistics in everyday life; (2) communicate their analysis of news reports, press releases and magazine articles that use statistics as evidence; and, in their writing, (3) use statistics found in tables and graphs. This involves:

Critical thinking:
- Identify whether or not a story involves an argument
- If a story does involve an argument, identify the point and the evidence
- Identify whether claims assert association, causation, or in between

Statistical literacy:
Understand and apply your knowledge of the four influences on a statistic and how it is perceived as represented in the “Take CARE” acronym explained below. These four influences are Context, Assembly, Randomness, and Error (bias). Here are specific outcomes for each of these.

Context: Influence of factors that were or were not controlled for
Chapter 1:
- Understand how an association can have alternate explanations
- Distinguish a confounder from a common cause
- Distinguish alternate explanations from mechanisms

Chapter 2:
- Distinguish study designs: experiment vs. observational study, longitudinal vs. cross-sectional, controlled and random assignment
- Read and communicate numeric comparisons: difference, ratio or relative difference; distinguish percent and percentage points
- Understand how different study designs and comparisons block or control for different kinds of related factors
- Identify plausible confounders that could affect an association

Chapter 3:
- Understand distributions, frequency, ranks and percentiles.
- Understand means, medians and modes and their relationships
- Calculate influence of a confounder on an average
- Understand best-fit model, range, interquartile range, standard deviation, Z-scores, coefficient of variation and effect size

Chapter 4:
- Understand how ratios control for factors such as size of group
- Identify part and whole for ratios in tables and graphs.
- Read and write descriptions of ratios using percent, percentage, rate and chance grammars, and convert among different grammars

Chapter 5:
- Calculate percentage attributed and cases attributed
- Read and write comparisons of ratios using percentage, rate, chance and likely/prevalent grammar

Chapter 6:
- Understand the confusion of the inverse, the base-rate fallacy (prosecutor’s fallacy) and accuracy and error in medical tests
- Calculate the influence of a confounder on a ratio.

Assembly: Influence of choices in defining, measuring or presenting
- All chapters: Understand how the size of a statistic and a comparison of two statistics can be influenced by choices in definition, grouping, measurement and presentation

Randomness: Influence of chance
- Ch 1: Understand Law of Very Large Numbers and Margin of Error
- Ch 7: Distinguish empirical, analytical and subjective measures of probability; understand importance of independence
- Ch 7: Understand practical applications of chance in sensitive surveys, in adjusting for guessing and in estimating population sizes
- Ch 7: Understand confidence levels, margin of error, confidence intervals, statistical significance and the impact of sample size
- Ch 7: Distinguish statistical significance and practical importance
- Ch 7: Understand how statistical significance can be changed by taking into account the influence of a confounder

Error: Influence of bias
- Ch 1: Distinguish respondent, measurement and sampling bias
- Ch 2: Understand Hawthorne, halo, pessimism and safety effect
- Ch 2: Understand benefits of single blind and double blind studies