Flaws of Averages PBL Unit Goals

- Students will learn the basic concepts of histograms and distributions, including their averages, medians, modes and extreme values. They will understand how histograms that display their data provide more insights than averages alone, and that averages may in fact be misleading.

- By working in small student teams focused on a local community safety issue, they will become comfortable planning and executing an applied research strategy that identifies potential problems, maps out a data collection plan, collects and displays the data, and makes recommendations based not only on average values found, but on all other attributes of their empirical distribution(s). If possible, teams will meet with appropriate community professionals once their finding are completed, to share their work and to receive feedback.

Final Products

- Each team will submit a 10-page written essay that should explain and display their selected community-oriented Flaws-of-Averages topic to a general audience, including professionals in the community who have responsibility over the topic chosen, but not forgetting family and friends!

- At the project's [Final Event](#), each team will discuss their findings employing a slide presentation that builds off information included in their essay. Histograms and photographs should be included in the slides.

What products will students be turning in to assess their progress and understanding of the subject?

- A ten-page essay, with histograms and illustrative photographs from their community research, addressed to a general community/newspaper audience.

- Slide presentation (shared electronically).

- A bibliography of all sources used.

Flaws of Averages Project Rubric

As we collect and display data related to our selected community problem,
how can we analyze and interpret the data using entire empirical distributions (not averages
alone) in order to arrive at positive community-directed recommendations?

Title of Presentation: _____

Student Names: _____

Things we can improve:	Base Criteria	Things that were excellent:
	Research: 1. Written clearly, with appropriate citations. 2. Based on well thought-out data collection strategy and implementation plan. 3. Effective uses of data. 4. Effective uses of Internet search.	
	10-page essay: 1. Clearly, concisely written, with style. 2. Good opening paragraph and good lead sentences for each other paragraph. 3. Many key points with insights covered, including why the averages alone are flawed. 4. Goes deep in at least one topic. 5. Includes histogram displays and informative photographs. 6. Ends with specific ameliorative recommendations.	

	Slide presentation: 1. Appealing content with often surprising insights. 2. Smooth transitions between presenting team members. 3. Passion and interest shown by all presenters. **4.** One or two minutes: Team's reflections on the entire 5-week exercise.	
	Effective use of visuals: 1. Multiple uses of images, photographs, diagrams, even cartoons to support aural presentation. 2. Minimization of bulleted lists of words. 3. Extent to which visuals complement rather than duplicate verbal presentation.	
	Team Collaboration: 1. Effective Team contract signed by members. 2. Disputes resolved amicably. 3. Extent of collaboration and cooperation demonstrated in Final Event presentation.	