



Activity 3: Analyzing the Results



TEKS
6th-8th

(2) Scientific investigation and reasoning. The student uses scientific inquiry methods during laboratory and field investigations. The student is expected to:



(D) construct tables and graphs, using repeated trials and means, to organize data and identify patterns; and

(E) analyze data to formulate reasonable explanations, communicate valid conclusions supported by the data, and predict trends.

ACTIVITY DESCRIPTION:

Graphs are commonly used by scientists to compare and predict trends in data that is collected during an investigation. Two common types of graphs are line and bar graphs. Both types of graphs are needed to display different types of data. Line graphs are typically used to demonstrate a change in a variable over a certain amount of time. Bar graphs are used to show comparisons within the data.

Most graphs should include a title, key/legend, and titles for the x axis and y axis. The independent variable is located on the x-axis and the dependent variable is on the y-axis.

Table 3 represents relative risks of overdosing when taking different amounts of opioids. The risks of death at each dosage level are referenced to the 1 to <20 mg dosage. This means that a person taking more than 100 mg of opioids for chronic pain is 7.18 times more likely to die of an overdose than someone who takes less than 20 mg for chronic pain.



Table 3: Risk of Death by Prescription Opioid Overdose

Maximum prescribed daily opioid dose	Chronic Pain (non cancer)	Cancer	Acute Pain	Substance Use Disorders
1 to <20 mg	1(reference)	1(reference)	1(reference)	1(reference)
20 to < 50 mg	1.88	1.74	1.58	1.42
50 to <100	4.63	6.01	4.73	2.76
≥100	7.18	11.99	6.64	4.54





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ACTIVITY SUGGESTIONS:

- Students can work individually.
- Provide graph paper or have students construct their own.
- Activity can be completed after reading the transformation peer-reviewed article.
- If available, students can use Excel or graphing calculators to graphically represent the data.

EXTENSION:

- Assign a sub group to each group (2-4) and have them write a conclusion based on the data. Student groups can report out the conclusions class.

AUTHORS/PUBLICATION INFORMATION:

Bohnert, A. S., Valenstein, M., Bair, M. J., Ganoczy, D., McCarthy, J. F., Ilegen, M. A., Blow, F. C. (2011). Association between opioid prescribing patterns and opioid overdose-related deaths. *Journal of the American Medical Association*, 305(13), 1315-1321. doi: 1315-1321. doi:10.1001/jama.2011.370.

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Dunn, K. M., Saunders, K. W., Rutter, C. M., Banta-Green, C. J., Merrill, J. O., Sullivan, M. D., . . . Von Korff, M. (2010). Overdose and prescribed opioids: Associations among chronic non-cancer pain patients. *Annals of Internal Medicine*, 152(2), 85-92. doi: 10.1059/0003-4819-152-2-201001190-00006.





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FDA acts to reduce harm from opioid drugs. *U.S. Food and Drug Administration*. Retrieved July 11, 2011, from <http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm251830.htm>

How do opioids work in the brain? *The National Alliance of Advocates for Buprenorphine Treatment*. December 2008. Retrieved on July 11, 2011 from http://www.naabt.org/faq_answers.cfm?ID=6.

Malbran, P. (2007, May 31). What's a pill mill? CBS News. Retrieved on July 11, 2007 from http://www.cbsnews.com/8301-501263_162-2872835-501263.html#ixzz1QbSZC4V0.

Pilkington, E. (2011, June 9). Pharmageddon: How America got hooked on killer prescription drugs. *The Guardian*. Retrieved from <http://www.guardian.co.uk/world/2011/jun/09/us-drugs-oxycodone-painkillers-florida?INTCMP=SRCH>.

Tucker, T. (2009, July 5). Why does the brain contain opioid receptors? *Lexington Herald-Leader*, C6. Retrieved from <http://www.addictionsurvivors.org/vbulletin/showthread.php?t=21931>.

