

Homework Assignment 5: Due at the beginning of class 10/7/02

The specific learning goals of this assignment are for you to:

- Decide which sort of function (linear, exponential or power) would do the best job of representing the trend in set of data.
- Use the regression capability of a graphing calculator to find equations for linear, exponential and power functions.
- Use functions to make predictions.
- Exercise your critical thinking abilities in a written critique.

Note: **Graphs showing plots of the data included in Tables 1 to 4 are available as a separate document that you can download and print out if you want to. Some starting points for Question 5 are also available as a separate document.**

As you have learned, the federal government spends money at a furious rate¹ in order to reduce or eradicate illicit drug use in America. As you have also learned, the percentage of high school seniors who have tried illicit drugs has not always gone down in recent times – between 1992 and 1997, for example, the percentage of American high school seniors who reported illicit drug use rose from 40.7% to 54.3%² while during the same period, the federal government spent more than \$90 billion³ on drug eradication.

In Questions 1, 2, 3 and 4 this homework assignment, you will analyze sets of data, create functions to represent the trends in the data, and predict the situation for the year 2010. Your answer to each of these questions should consist of the following:

- A determination of the type of function (linear, exponential or power) that will do the best job of representing the trend in the data.
- Evidence (e.g. a curve sketched on the provided graph or some kind of numerical test) to back up your decision.
- An equation for the function that does the best job of representing the trend in the data.
- A prediction for the year 2010. (Remember the units when appropriate.)

¹ As you learned in class on Friday September 27, the Office of National Drug Control Policy (ONDCP) spends money at the rate of about \$35,000 per hour.

² Source: Johnston, L. D., P. M. O'Malley and J. G. Bachman. 2002. *Monitoring the Future National Survey Results on Drug Use, 1975-2001. Volume 1: Secondary School Students*. Bethesda MD: National Institute on Drug Abuse.

³ Office of National Drug Control Policy. 2003. *National Drug Control Strategy FY 2003 Budget Strategy*. Washington DC: Executive Office of the President.

1. One of the measures of success that anti-marijuana programs often use is the *disapproval* of marijuana use expressed by American high school students. Table 1 gives the percentage of American high school seniors who answered “Yes” to the following question:

Do you disapprove of people (who are 18 or older) smoking marijuana occasionally?

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
%	79.7	75.5	68.9	66.7	62.9	63.2	64.4	62.5	65.8	63.2

Table 1: Long term trends in disapproval of drug use as by twelfth graders⁴.

2. A second measure of success anti-marijuana programs sometimes use is the *risk perception* expressed by American twelfth graders. Table 2 shows the percentage of twelfth graders who answered “Great Risk” to the following question:

How much do you think people risk harming themselves (physically or in other ways) if they smoke marijuana occasionally?

Year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
%	40.5	39.6	35.6	30.1	25.6	25.9	24.7	24.4	23.9	23.4

Table 2: Long term trends in harmfulness of drugs as perceived by twelfth graders⁵.

3. A third measure that anti-marijuana programs use is the percentage of twelfth graders who have smoked marijuana (or hashish) at least once in previous thirty days. Table 3 gives this percentage.

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000
%	11.9	15.5	19.0	21.2	21.9	23.7	22.8	23.1	21.6

Table 3: Percentage of twelfth graders who used marijuana or hashish in previous 30 days⁶.

⁴ Source: Johnston, L. D., P. M. O’Malley and J. G. Bachman. 2002. *Monitoring the Future National Survey Results on Drug Use, 1975-2001. Volume 1: Secondary School Students*. Bethesda MD: National Institute on Drug Abuse.

⁵ Source: Johnston, L. D., P. M. O’Malley and J. G. Bachman. 2002. *Monitoring the Future National Survey Results on Drug Use, 1975-2001. Volume 1: Secondary School Students*. Bethesda MD: National Institute on Drug Abuse.

⁶ Source: Johnston, L. D., P. M. O’Malley and J. G. Bachman. 2002. *Monitoring the Future National Survey Results on Drug Use, 1975-2001. Volume 1: Secondary School Students*. Bethesda MD: National Institute on Drug Abuse.

4. Table 4 shows the budget of the Office of National Drug Control Policy from 1994 to 2002. The units are billions of dollars.

Year	1994	1995	1996	1997	1998	1999	2000	2001	2002
Budget	11.96	12.98	12.99	14.35	15.18	17.12	17.82	18.09	18.82

Table 4: Office of National Drug Control Policy budget⁷, 1994-2001.

5. It is not our intention that Question 5 determine whether marijuana is an addictive drug or not. Nor is it our intention to suggest that marijuana can be safely used with absolutely no risk of adverse medical or psychological effects⁸. We suggest the following premise: *That the federal government's efforts to eradicate illicit drug use in the United States are based on relevant facts and cogent arguments.* The purpose of Question 5 is to provide you with an opportunity to exercise your logical and critical thinking abilities while examining the validity of this premise.

The following passage appears in the booklet *Marijuana: Facts for Teens* published by the National Institute on Drug Abuse⁹ (NIDA). Further, the *Facts for Teens* booklet is the only reference on marijuana addiction cited by the ONDCP fact sheet *Kids and Drugs: The Facts*, which targets parents, care givers and teachers. The excerpt provided below is the only part of the booklet that speaks to the issue of marijuana addiction¹⁰.

“Q: Can people become addicted to marijuana?”

A: Yes. While not everyone who uses the drug becomes addicted, when a user begins to seek out and take the drug compulsively, that person is said to be dependent or addicted to the drug. In 1995, 165,000 people entering major drug treatment programs reported marijuana as their primary drug of abuse, showing they need help to stop using the drug.”

Using this excerpt as an example, critique the premise given above. Your answer should consist of one to five paragraphs.

NOTE: Some suggestions of where you could begin are provided as a separate document that you can download if you choose to.

⁷ Source: Office of National Drug Control Policy. 2003. *National Drug Control Strategy FY 2003 Budget Strategy*. Washington DC: Executive Office of the President.

⁸ This is definitely not the case when marijuana is smoked in large quantities on a regular basis. See Chapter 7 of: Kuhn, C., S. Swartzwelder and W. Wilson. 1998. *Buzzed: The Straight facts About the Most Used and Abused Drugs from Alcohol to Ecstasy*. New York: W. W. Norton and Company.

⁹ National Institute on Drug Abuse. 1998. *Marijuana: Facts for Teens*. Bethesda MD: National Institute on Drug Abuse.

¹⁰ According to Kuhn, Swartzwelder and Wilson, there is actually little medically credible evidence to suggest that this is the case.