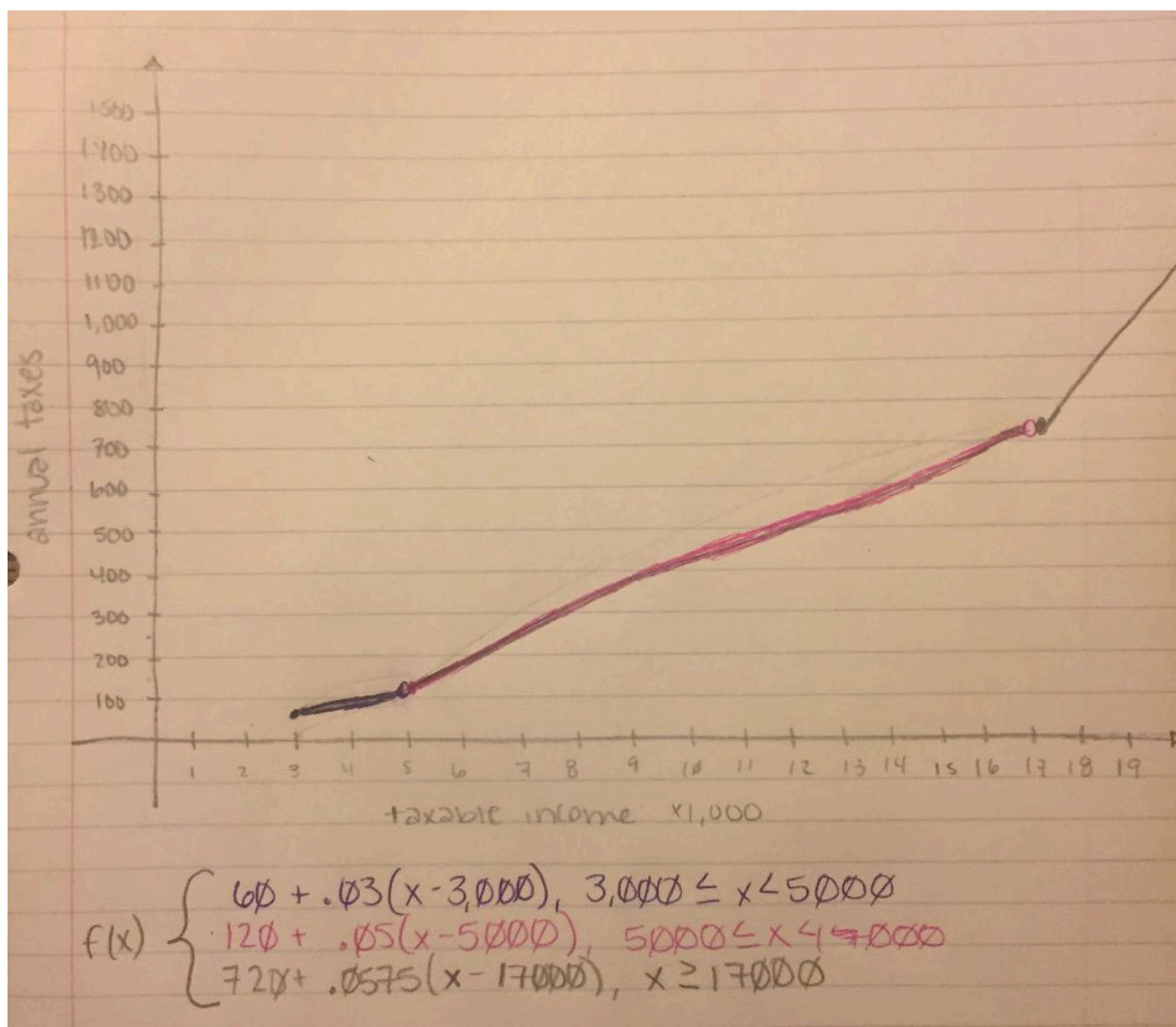


Virginia State Tax Project  
Haleigh Pannell & Emily Mozingo  
TR 9:30- Emerson-Stonnell

- Haleigh's future career (what is it, why is it reasonable, starting salary, where).
  - After I graduate I would like to become a pediatric psychiatrist. Currently, I am a psychology major and neuroscience minor and I have always wanted to help kids. I would first have to go to medical school before starting this job, so it would be after I graduated with that degree. I would like to work at a practice in a highly populated area that has colleges, so that my resources can be available for as many people as possible and I can help college students through their struggles. I believe that I could join a practice in Richmond because that best fits my description of where I want to be. The starting salary for a psychiatrist is \$197,000.
- Emily's future career (what is it, why is it reasonable, starting salary, where).
  - I plan on becoming an Elementary School teacher and begin my career in Loudoun County. My passion has always been with guiding children to become their best possible self. My job affects so many lives and is preparing and teaching children for their future. This is a tough process and I want to be the someone in their life they can rely on. I also plan on staying an extra year to achieve my masters degree which will increase my starting salary. My average salary for becoming a teacher would start around \$55,000.
- Mathematical Model of Virginia State Taxes in 2017.
  - $\$60 + .03(x-3,000)$ ,  $3,000 \leq x < 5,000$
  - $\$120 + .05(x-5,000)$ ,  $5,000 \leq x < 17,000$
  - $\$720 + .0575(x-17,000)$ ,  $x \geq 17,000$
  - $0 \leq Y$
  - $0 \leq Y$
- Explanation of Model.
  - The first equation would be for people who have a taxable income of at least \$3,000 but less than \$5,000
  - The second equation would be for people who have a taxable income of at least \$5,000 but less than \$17,000
  - The third equation would be for people who have a taxable income of at least \$17,000
  - The last two equations are for values greater than zero because taxes are those placed on incomes or other things to raise the price which gives the government more money. Therefore the amount cannot be negative.
- Graph.



- State taxes for John. (\$3,057)

- $60 + .03(3,057 - 3,000)$

- $60 + 1.71$

**\$61.71**

John is a front desk worker who makes \$3,057 per year. Since he makes more than \$3,000 but less than \$5,000 we used the first inequality to find his state taxes. For someone making the amount within this range, they would be charged with an interest rate of 3 percent. He is also charged the initial amount of \$60. We began by subtracting what he made, \$3,057, from the minimum amount of \$3,000 to find what the difference was. We then multiplied the difference to the decimal form of 3 percent by simply moving the decimal two places to the left. We found his state taxes to be \$61.71.

- State taxes for Susan. (\$12,628)

- $120 + .05(12,628 - 5,000)$

- $120 + 381.4$

**\$501.4**

Susan is a substitute teacher in Prince Edward County making \$12,628 a year. Since her income lies in between the \$5,000 and \$17,000, her interest is 5 percent, again finding decimal form by moving the decimal. We found the difference she had paid from the minimum amount of \$5,000 which we found to be \$7,628. This was then multiplied to the interest rate giving me \$381.40 which was then added to the initial amount of \$120. She paid \$501.40 in her state taxes.

- State taxes for Tony. (\$36,043)
  - $720 + .0575(36,043-17,000)$
  - $720 + 1094.97$
  - \$1,814.97**

Tony is a Farmville Police officer who makes \$36,043. He is making enough to be placed in the model consisting of incomes greater than \$17,000. Since he is making this much, his interest rate was raised to 5.75 percent. First, we found the difference between his income and the minimum income in this section which we found was \$19,043. We then multiplied this amount to the interest rate giving us \$1,094.97. Then we added this amount to the starting amount of \$720 which resulted in Tony paying \$1,814.97.

- State taxes for Haleigh (197,000)
  - $720 + .0575(197,000-17,000)$
  - $720 + 10,350$
  - \$11,070**

Haleigh plans on becoming a Pediatric Psychiatrist which means she is going to make well over the minimum amount of \$17,000 with a whopping 197,000. We know the interest for anything over \$17,000 is 5.75 percent so we multiplied this by the difference she was making by the minimum. This gave us \$10,350 to then be added to the principal amount of \$720 which showed us she is paying \$11,070 in state tax.

- State taxes for Emily.
  - $720 + .0575(55,000-17,000)$
  - $720 + 2185$
  - \$2,905.00**

Emily plans on becoming an elementary school teacher which means she is going to make \$55,000 which puts her one the third formula for calculating her taxes since her salary is well above \$17,000. We multiplied the difference between her salary and the minimum for her category by the rate 5.75%. That gave us \$2185 and then we added that to the base value of \$720 and the result is her annual taxes of \$2,905.

- Simple interest rate of taxes for John.
  - $I = Prt$
  - $I = (3,057)(.03)(365/365)$
  - I = \$91.71**

John's simple interest rate will be his annual salary of \$3,057 multiplied by his tax rate of 3% and by the time of one year. His interest comes out to be \$91.71.

- Simple interest rate of taxes for Susan.
  - $I = 12,628 * .05 * 1$
  - I = \$631.40**

Susan's simple interest rate will be his annual salary of \$12,628 multiplied by her tax rate of 5% and by the time of one year. Her interest comes out to be \$631.40.

- Simple interest rate of taxes for Tony.

- $I = 36043 * .0575 * 1$

**$I = \$2072.47$**

Tony's simple interest rate will be his annual salary of \$36,043 multiplied by his tax rate of 5.75% and by the time of one year. His interest comes out to be \$2072.47.

- Simple interest rate of taxes for Haleigh.

- $I = 197,000 * .0575 * 1$

**$I = \$11,327.50$**

Haleigh's simple interest rate will be his annual salary of \$197,000 multiplied by her tax rate of 5.75% and by the time of one year. Her interest comes out to be \$11,327.50.

- Simple interest rate of taxes for Emily.

- $I = (55,000)(.0575)(365/365)$

**$I = \$3162.50$**

Emily's simple interest rate will be his annual salary of \$55,000 multiplied by her tax rate of 5.75% and by the time of one year. Her interest comes out to be \$3,162.50.

- Compare state taxes to simple interest rate.

- Simple interest rate is higher than state taxes because simple interest multiplies a constant rate against the entire taxable income while the state taxes subtracts a portion of the income from being multiplied by the rate.