

Making Estimates with Limited Information

A Case Study in Visual Least Squares Estimation

Assignment

- Estimate the value of property taxes lost to local governments if the Legislature exempts residents who own a homestead, are totally and permanently disabled, whose income is less than \$20,000 per year, and do not need a wheelchair for mobility from taxation.

Applied Fermiology

- Named after physicist Enrico Fermi, the Fermi problem involves plausible estimation by following a series of simple steps that use only common sense and numbers that are generally known or are amenable to estimation.

Steps to Our Estimate

- Estimate the number of totally and permanently disabled people in the state that do not require a wheelchair for mobility.
- Estimate the number of such people that qualify under the income provision.
- Estimate homeownership in this group.
- Estimate the value of property taxes paid.

Step 1: Number of T&P Disabled not Using Wheelchair

- Florida currently provides a \$500 exemption from taxable value to these disabled. Approximately 90,000 claim this exemption in 2003.
- Caveat: At 20 mills, a \$500 exemption will only save a person \$10 a year in taxes. Might there be others who qualify but don't go to the trouble to file for the exemption to save \$10? However, they are much more likely to file to save \$2,000.
- We increase the estimate by assuming a 50% increase in filers due to increased incentive.

Step 2: Estimate the number qualifying under the income provision

- We use U.S. Census Bureau data on Americans with Disabilities.
- Percentages are provided for people with a severe disability whose income is less than \$20,000.
- We believe that a number of these people may live in households with others that have income that would disqualify them from the exemption, but we have no idea how many.
- We assume that 40% of them have no other disqualifying household income.

Step 3: Estimate homeownership rate

- We assume a homeownership rate of 50%. This is less than the 70% homeownership rate in Florida based on the assumption that low-income, totally and permanently individuals are less likely to own their home.

Step 4: Estimate Value

- We already exempt totally and permanently disabled persons who use a wheelchair for mobility. Thus, we know the average value of their homesteads.
- We assume that the value of homesteads for our group is the same.
- Applying the statewide weighted average millage to the average value of homesteads, times the number of newly exempt homesteads, gives us our estimate after deducting the \$500 exemptions no longer claimed.

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- The final step is to check your answer for reasonableness. In this case our estimate is \$11 million.
- Statewide ad valorem levies amount to \$17 billion.
- Are you comfortable with this result?
- Are you comfortable with our assumptions?