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Estimating the Effect of Advertising in Bringing Victims to Rehabilitation

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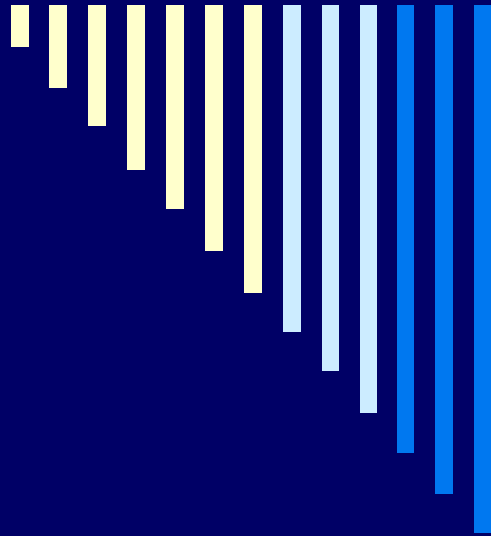
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Estimating the Effect of Advertising in Bringing Victims to Rehabilitation

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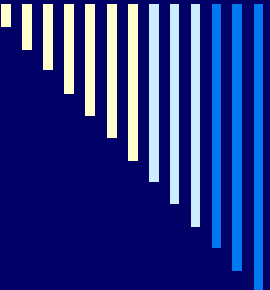
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Problem

- Several thousand Ukrainian citizens self-identified as Victims of Trafficking (VoTs) over 2002-2005 at rehabilitation centers.
 - This is clearly only a fraction of the total VoTs.
 - How many would come in to rehabilitation centers with more or different advertising?
-



Method for an “Advertising Response” model

- Unit of analysis: Oblast/year
 - Data provided by NGO’s operating in Oblasts.
 - Dependent variable: Victims of trafficking per million population identified in an oblast in a year.
 - Independent variables: Percent of population covered by brochures, educational opportunities, posters, newspapers, TV, radio, press conferences, and educational literature.
-



“Advertising Response” model

- Also: the previous year’s value of each of those independent variables.
 - Thus, we have 16 independent variables to predict the victims identified per million population each year.
 - There were 52 Oblast/years with all 16 variables.
-



“Advertising Response” model

- We used data from 22 NGO’s in 25 Oblasts, and excluded data from NGO’s that claimed to cover more than two Oblasts, or from Oblast/years with missing data.
-



“Advertising Response” model

- We call the area thus covered the “Study Area”
 - The total population in the 22 Oblasts is approximately 38.5 million people.
 - (The total Ukrainian population is 48.5 million).
 - In those areas, 1179 people were identified as trafficked in 2002-2005.
-



“Advertising Response” model

□ Year	Number identified
□ 2002	179
□ 2003	238
□ 2004	347
□ 2005	473



“Advertising Response” model

- Now, the question becomes, “How many might have been identified if the strongest effective methods of recruitment had been employed to their fullest practical extent?”
-



“Advertising Response” model

- To answer this, we performed a regression analysis,
 - using the percent coverage of the 8 methods of recruitment as predictors of victims identified per million population,
 - plus the percent coverage of the same 8 methods that had been employed in the Oblast in the previous year.
 - Plus quadratic effects.
-



“Advertising Response” model

$$\begin{aligned} \text{VOTs per million} = & b_0 + \\ & b_1 * \text{CAM}_1 + b_2 * \text{CAM}_2 + \dots + b_8 * \text{CAM}_8 + \\ & b_9 * \text{CAM}_1' + \dots + b_{16} * \text{CAM}_8' + \\ & b_{17} * \text{CAM}_1^2 + \dots + b_{24} * \text{CAM}_8^2 \end{aligned}$$

CAM_x = Coverage of ad method x, current year.

CAM_x' = Coverage of ad method x, previous year.

CAM_x^2 = Coverage of ad method x, current year,
squared.



“Advertising Response” model

Results:

- We can account for 58% of the variability in victims identified per million with just two predictors:
 - Percent of population covered by radio in the year of identification.
 - Percent of population covered by radio in the previous year.
-



“Advertising Response” model

The equation:

- Victims identified per million population =
 - 8.82
 - +0.393 * Percent of population covered by radio in the year of identification
 - +0.011 * Percent of population covered by radio in the year of identification²
 - -0.013 * Percent of population covered by radio in the previous year²
-



“Advertising Response” model

What does this mean?

- First, that one begins with about 8.82 persons identified per million population each year, then adjusts that based on radio advertising in the current & previous years.
 - Since the equation includes quadratic terms, it is a little complicated to interpret –some graphs presented later will help.
-



“Advertising Response” model

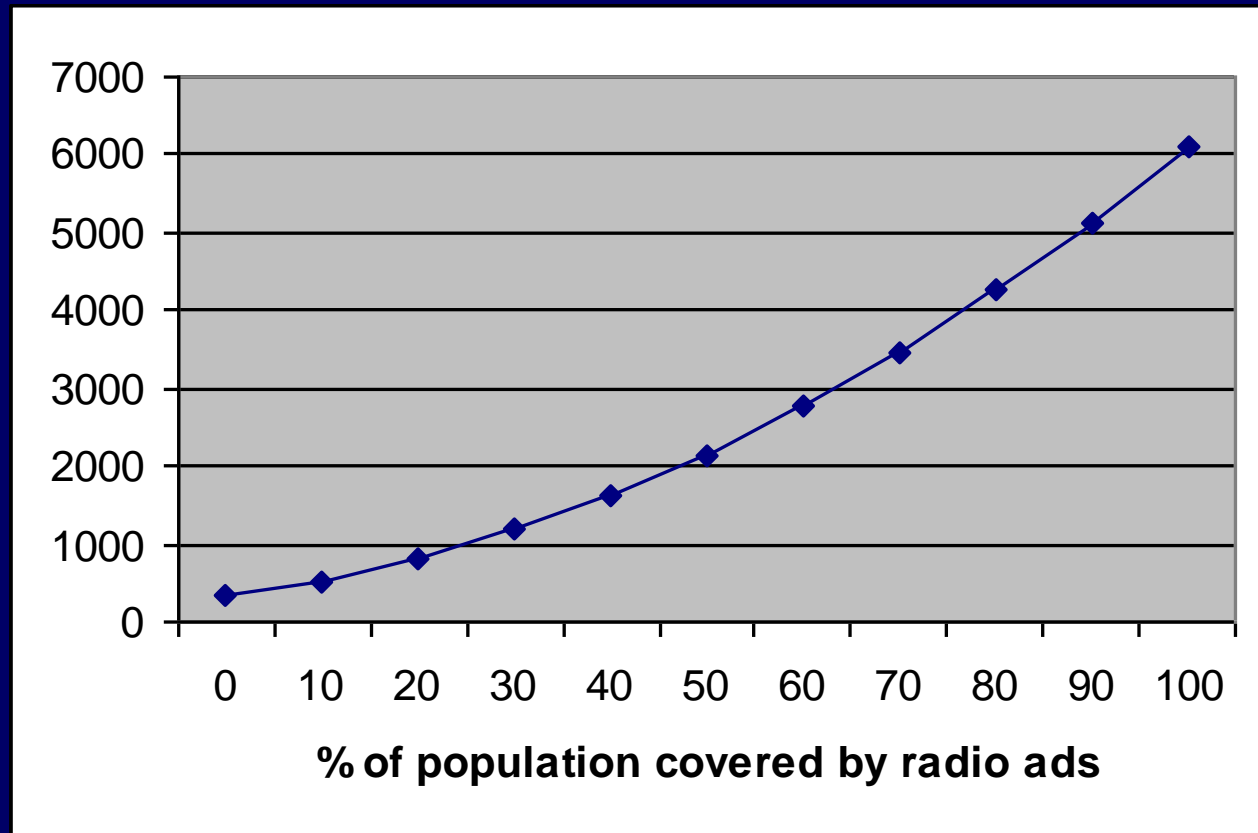
- But first, it is worth noting that none of the other 7 methods of recruitment had an effect in the presence of radio advertising.
 - This seems to argue that, nation-wide, the other 7 methods were not very effective at getting more victims to self-identify.
-



“Advertising Response” model

- Now, some graphs will help show the effect of radio advertising in the current and previous years.
 - Applying the equation just to our study area of 38.5 million people, here is what we would predict for the number of victims identified at various levels of radio advertising coverage,
 - Assuming NO previous advertising.
-

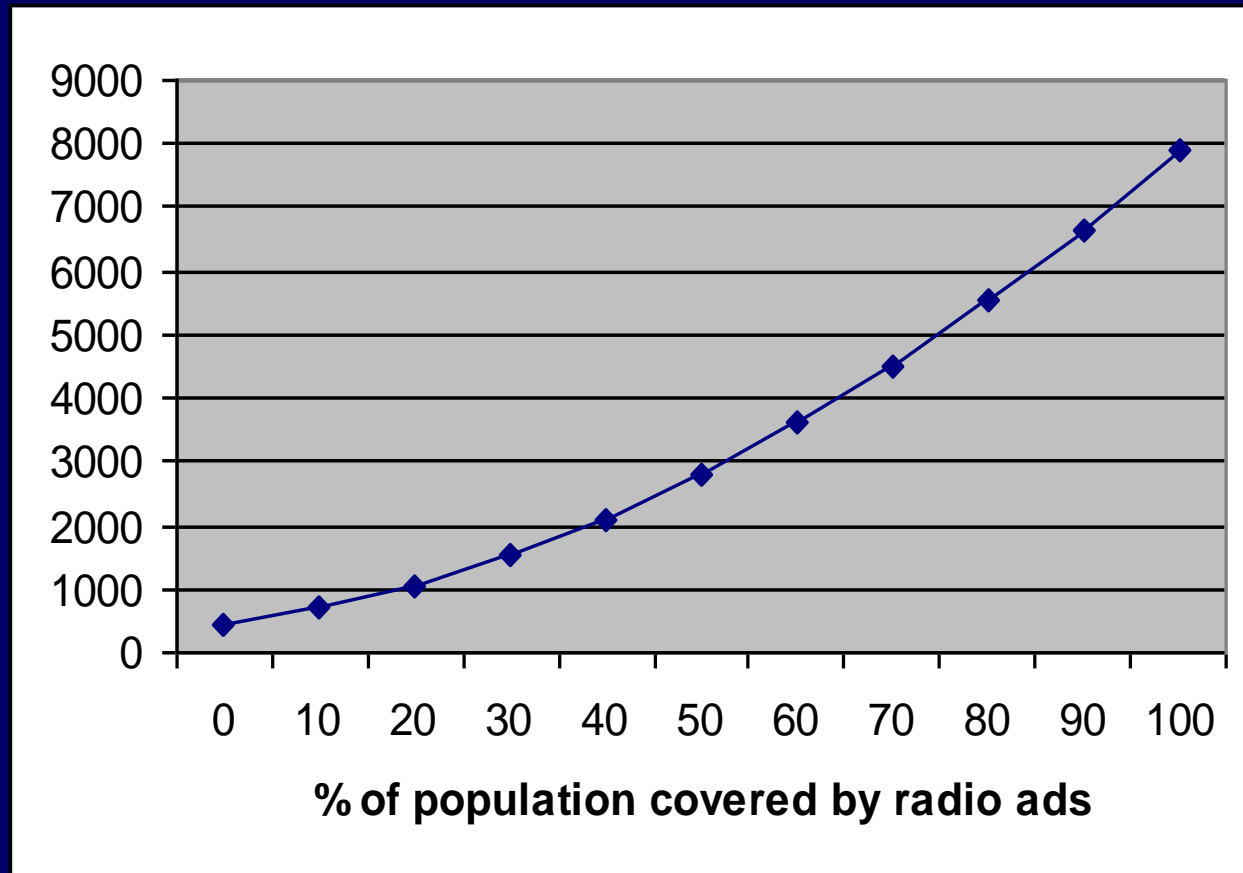
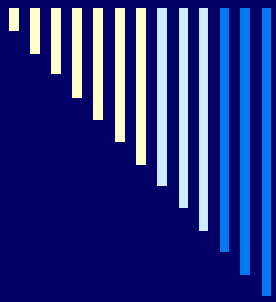
victims identified in Study Area if NO previous radio advertising





Effect of Radio Advertising

- As you can see, saturation of the radio waves in the entire study area could produce as many as 6000 people self-identified as victims in a year, assuming no previous radio advertising.
 - The number is higher if one assumes that one can saturate the entire Ukraine, with about 48.5 million people:
-



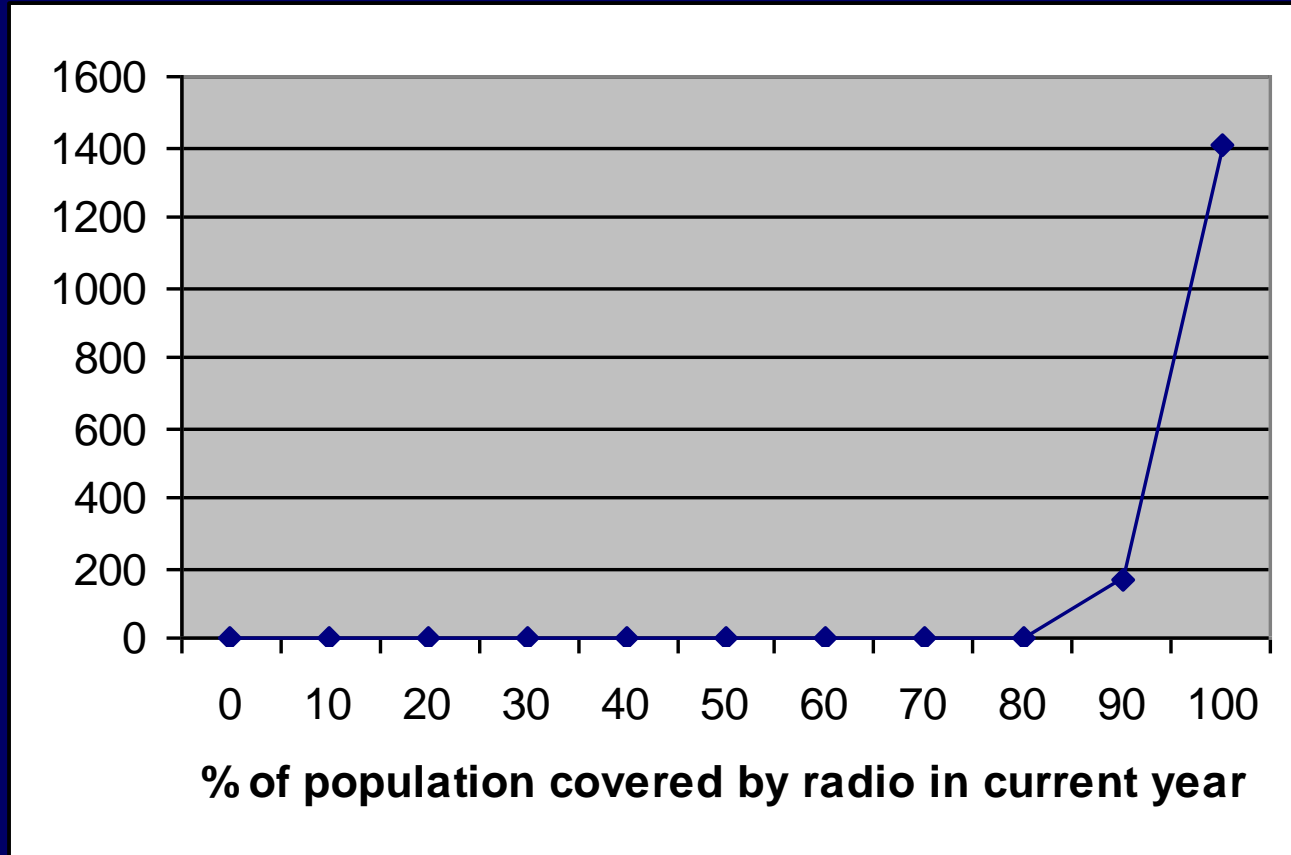
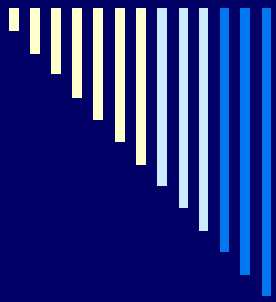
Note that, if one assumes the entire Ukraine fits the model, then almost 8000 people would come forward

(with 100% coverage of the population by radio).



Effect of Radio Advertising

- However, previous radio advertising has a negative effect on the number of people who self-identify in the current year.
 - Perhaps this is because the previous year's advertising has brought out a “backlog” of people who were made aware of services available.
 - Or, perhaps it is because advertising actually works at reducing the number of VoTs in future years.
-



As one can see, 90% radio saturation the previous year
Produces many fewer victims identified in the current year.
(Data for entire Ukraine of approximately 50 million population).



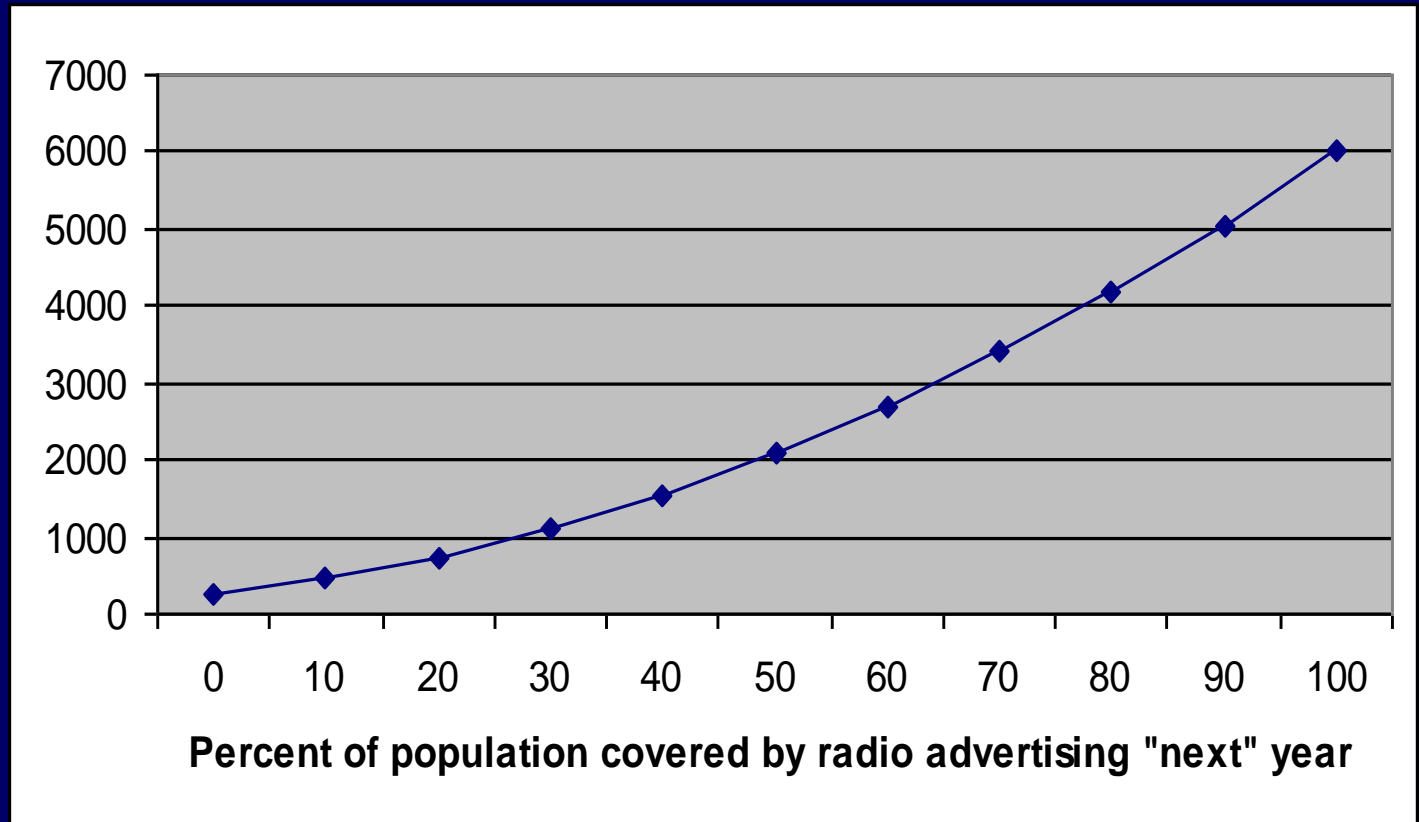
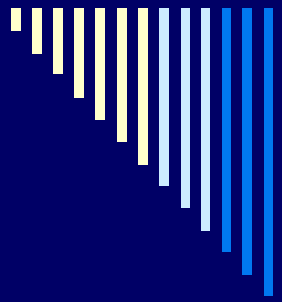
Effect of Radio Advertising

- In 2004, about 4.0 million people in the study area were exposed to radio advertising (about 10.4% of study area)
 - In 2005, about 4.7 million, or 12.2% were.
 - Those values, entered into the equation for the effect of radio advertising, predicts 533 people identified in the study area in 2005, reasonably close to the 473 who actually were.
-



Effect of Radio Advertising

- Given the present level of advertising in the study area, here is what we would predict as the effect of increasing radio advertising in the first year of increase:
-

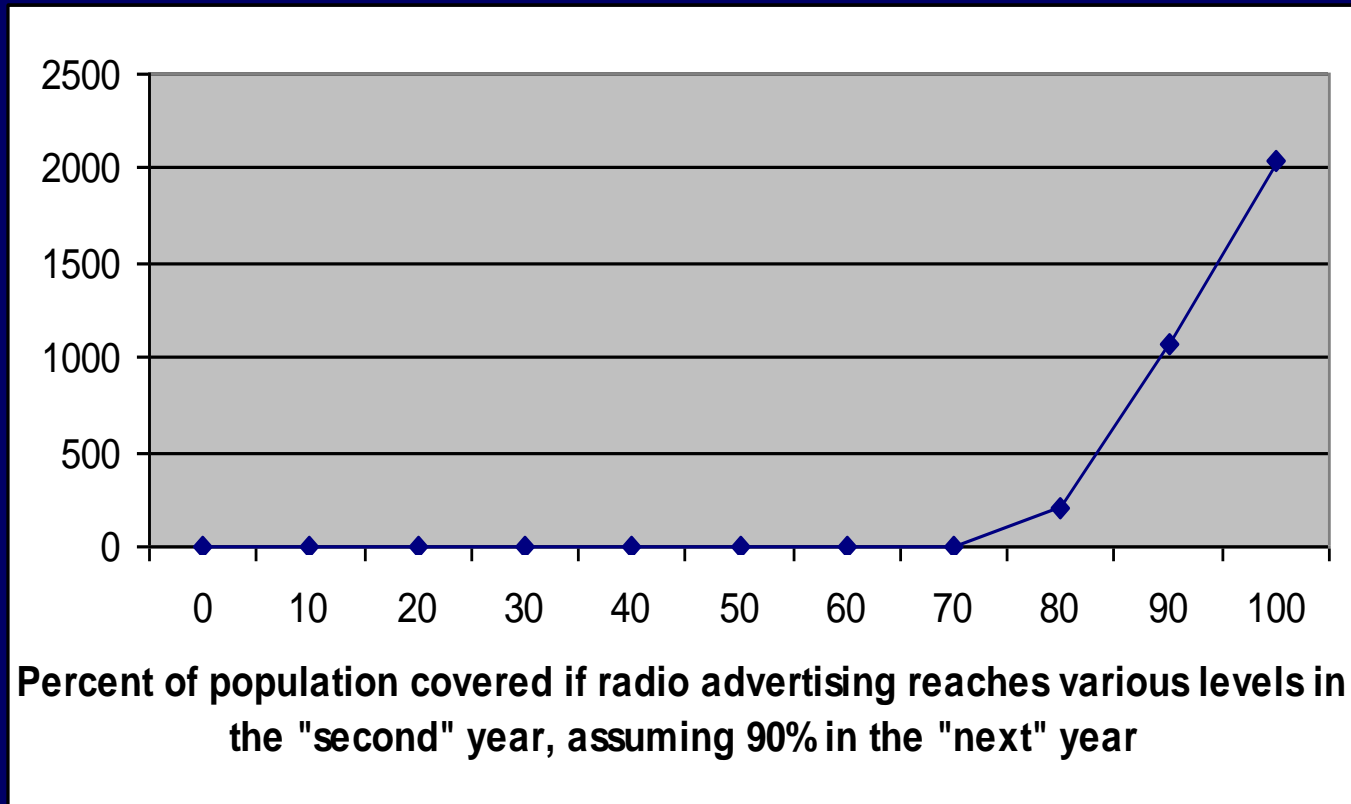
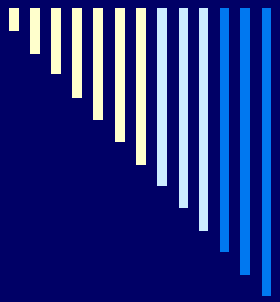


The predicted number of self-identified victims in the “next” year if radio advertising coverage reaches various levels in that year (in the study area)

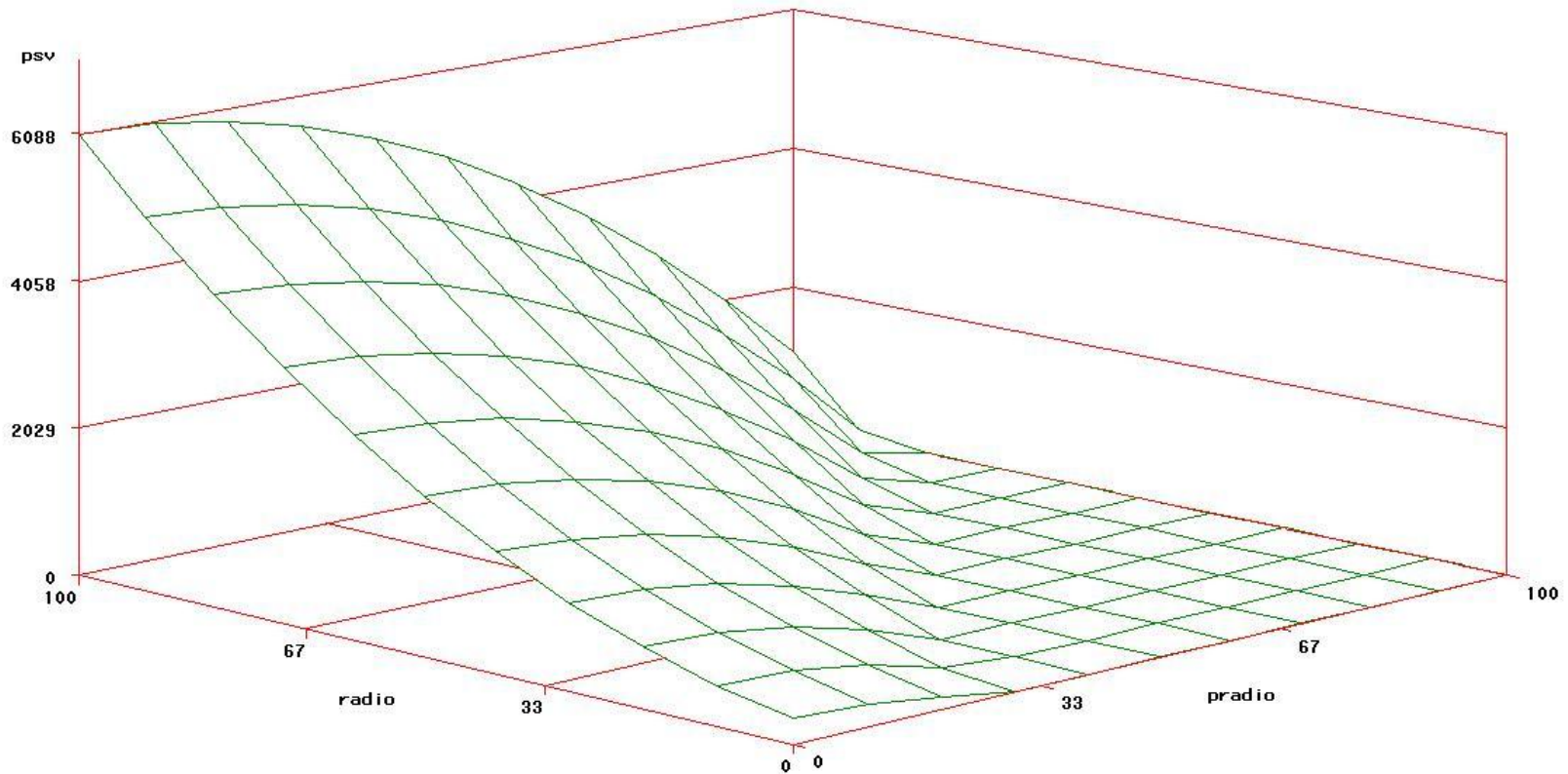


Effect of Radio Advertising

- But, if we assume that radio advertising reaches 90% saturation in the next year, then in the following year (“second” year),
 - the number of persons self-identified will drop a great deal,
 - depending on the level of radio advertising in that following year:
-



Predicted number of VoTs self-identifying given various levels of second-year radio advertising (in the study area).



Graph of the full radio advertising response model, where “radio” is current year saturation and “pradio” is saturation in the previous year (study area).



Effect of Radio Advertising

- So, let us assume, as steady-state, that radio advertising is pushed to 90% coverage levels in the entire study area over many years (the Chernivts NGO claims 97%).
 - The model would predict about 5000 self-identified VoTs in the first year, and about another 1000 or so every year thereafter.
-



Effect of Radio Advertising

- If we scale these predictions up to the entire Ukraine, of about 48.5 million population,
 - We would predict about 6600 VoTs self-identified in the first year of a 90% saturation radio campaign, and about 1400 every year thereafter,
 - Assuming that the remaining areas of the Ukraine are like the study area.
-



“Advertising Response” model

So, we feel fairly confident, from the data we have, that:

1. Radio is the most effective medium overall for getting people to self-identify as trafficked,
 2. Saturation of radio, if feasible, should convince many more people to self-identify, and
-



“Advertising Response” model

3. Saturation might produce close to 5000 self-identified victims the first year, and about 1000 each year thereafter, in the study area.
 4. (Or 6600 and 1400 if the entire Ukraine is saturated and is homogenous with respect to victims)
 5. This argues that, nation-wide, at least 1400 people per year are both VoTs and willing to self-identify if approached.
-



“Advertising Response” model

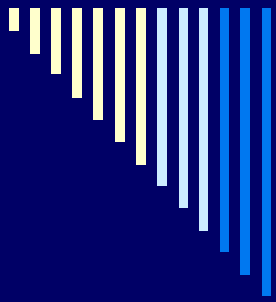
Some caveats:

- The estimates of “population percent covered” are sometimes impressionistic.
 - We cannot account for 42% of the variance in the number of victims identified per million population.
 - And, most importantly ...
-



“Advertising Response” model

- These estimates are only a lower bound on the number of people actually trafficked each year.
 - We have estimated the number of people who would *self-identify* as trafficked if the radio waves were saturated.
 - What about all those who would *never* self-identify?
-



Questions?
