Name(s)	Project Number
Nicholas G. Wong	**S0423**

Project Title

Currency Movement Projections and Possible Societal Applications Using Dollar Bill Tracking Data

Abstract

Objectives/Goals

Dollar bills stamped with the "wheresgeorge.com" website were spent in Yolo or Sacramento County. Bills were tracked over time from their starting points by monitoring locations and dates where members of the general public received and logged in a stamped bill (a "hit"). The main goals of this study were to see if information from these "hits" could be used for 1) Development of a mathematical expression for predicting the movement of bills over time and 2) A social science based study to observe if information regarding these "hits" could be correlated with a variety of economic, transportation, and health related demographic data.

Methods/Materials

1) Dollar bills were marked the "wheresgeorge.com" site using stamps, recorded online, and then separated into the two distribution groups (Sacramento/Yolo). 2. Bills were then spent in their respective counties or exchanged with residents in those counties 3) For several months, bill tracking reports of "hits" were downloaded and recorded.

Results

Over a long term, the distance that a bill moves over time was best fit with a polynomial (Yolo) or exponential (Sacramento) expression. Over a shorter term (< 4 months) a linear expression could be calculated. For both counties, the number of commuters to and from a neighboring county correlated best with the "hits". Yolo county bills had higher "hits" correlation with neighboring counties based on population levels while the "hits" from Sacramento bills correlated more with counties with higher personal income, personal spending and lower poverty levels.

Conclusions/Discussion

Mathematical expressions can be developed for distances of "hits" over time and for the first few months, bills moved approximately 10 miles/week. Correlation analysis shows that bills from a smaller populated county tend to gravitate toward counties with larger populations while bills from a larger populated county are distributed to neighboring counties based on economic factors such as higher personal incomes, personal spending, and lower poverty levels. The number of commuters between counties appears to be the major factor for movement of dollar bills. The methodology developed in this study could be expanded for a larger scale study by researchers by following bill movements through more robust methods such as tracking bills in financial institutions in different areas and correlating with additional demographic data.

Summary Statement

Movements of dollar bills were tracked online and this information was used to determine the flow of bills between counties and the possible correlations of these flows with various economic, transportation, and health demographic data.

Help Received

Statistical analysis advice was given by AP biology teacher, Ms, Cordelia Nguyen. Mathematical expression calculations advice was given by my Pre-Caculus teacher Mr. Dennis Plotts. Advice on sources for demographic data was given by my AP History teacher, Mr. Todd Whalen