MAPPING ALCOHOL AVAILABILITY IN LOS ANGELES COUNTY: A PRACTICAL APPLICATION OF SAS/GRAPH

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ABSTRACT

The purpose of the Local Alcohol Availability Database (LAAD) is to assist in the development of alcohol policy in Los Angeles County at the community level. Interactive maps produced with SAS/GRAPH can present an extensive amount of LAAD produced data in a single visual presentation. The unique characteristics of Choro, Prism and Surface maps are ideal for conveying information related to the physical availability of alcohol quickly and efficiently. This type of data presentation is essential for informing non-statistically grounded policy makers.

INTRODUCTION

Alcohol is a risk factor for a number of health problems which can be studied at both the individual and societal level.[1] There is now considerable evidence that alcohol control policies which limit the availability of alcohol at the community level can reduce specific alcohol-related problems.[2,3]

The Local Alcohol Availability Database (LAAD) was developed to provide an archive of selected alcohol data for the development of alcohol policy at the local level. SAS/GRAPH interactive mapping capabilities are being used to combine multiple datasets to develop a comprehensive profile in a single map. A mapped profile of alcohol sensitive data facilitaties interpretation of the data at a multidimensional, i.e. spacial, temporal and relational, level by providing a visual presentation. Specifically, maps using LAAD data are providing a profile of the alcohol environment in the Los Angeles County communities. Thus, these interactive data maps will be beneficial in the development of alcohol policy by individuals who may have a limited background in the interpretation of statistical data.

BACKGROUND

There are two types of alcohol sensitive data which can be accessed from the LAAD - descriptive and analytic data. Descriptive data can provide a "demographic" profile of the alcohol environment in a locality. Analytic data can be used to describe the relations between factors which make up the alcohol environment. This study will only describe the graphic representations of descriptive data for the availability of alcohol in Los Angeles County.

The LAAD contains alcohol availability data for each of the 84 cities and 265 zip codes which make up Los Angeles County. Availability measures are derived from annual totals from the California Alcoholic Beverage Control (ABC) Department. Population data to determine densities was obtained from the 1990 National Census.

The data from the LAAD which will be used to demonstrate the utility of interactive data maps includes outlet density data for both on- and off-sale beer and wine outlets. Outlet density determined by dividing the total number of outlets by the population for the same area. Outlet types are determined by where alcohol can be consumed and what type of alcohol can be purchased. On-sale outlets sell alcohol that must be consumed "on" the premises (i.e. restaurants, bars);

off-sale outlets sell alcohol that must be consumed "off" the premises (i.e. mini markets). The type of alcohol which can be purchased at a an outlet is categorized as either beer and wine only or all types of alcohol.

In Los Angeles County the increase in off-sale beer and wine outlets has exceeded the increase in population over the last ten years. The increase in density is believed to be related to the increase in a number of alcohol related problems[4]. As a result, community groups and localities are attempting to take control of outlet density away from the alcohol dependent businesses and corporations. On-sale beer and wine outlets pose a different problem. Many up-scale localities have encouraged the proliferation of the on-sale types of establishments in hopes of increasing tax revenues and improving the social climate. However, in a number of these communities there are now movements to limit these types of outlets because of the the problems that this continuing proliferation poses, i.e. parking, crime, accidents and vagrancy. We anticipate that the results of the LAAD data analyses will add to the debate, cost and benefit analyses of further proliferation in addition to the current debate which usually focuses on individual testimonials and religious denunciations.

The LAAD archive is currently housed on a 386 PC linked to a local network with UNIX support. A nine track tape driver is available for data transfers from mainframe computers. An HP Laserjet III is available for graphics printing. All maps were produced using the GMAP procedure in the SAS/GRAPH package[5].

METHODS

Digitized maps defining the boundaries of the 84 cities within Los Angeles County were not used because they are not currently available and the development of such maps is beyond the financial scope of the current LAAD project. Maps digitized at the zip code level and compatible with SAS/GRAPH software were utilized in this analysis The zip code map program was purchased to provide the polygons for all zipcodes in Los Angeles county as of 1991. To update the LAAD to include zip code level alcohol availability data a listing of currently active outlets was obtained from the California ABC Department as of March 1, 1992. To determine densities 1990 Census data with zip code estimates was obtained from the Census Bureau. LAAD data and map data were merged using zip code as the merge variable. Zip codes with less than 10,000 residents are included and assigned a density of 0.

RESULTS

The following types of maps were produced using PROC GMAP - choro maps, prism maps and surface maps. The inherent characteristics of each map type permit different types of visual analysis.

Off-Sale Beer & Wine Outlet Maps.

Figure 1. Choro map. Zip codes exceeding the county wide density limit for off sale outlets (4 outlets per 10,000) are shaded. Zip codes with densities twice the county limit are solid. The choro map gives a geographic overview of outlet density documenting that the concentration of off sale beer and wine outlet in the poor and minority neighborhoods of south central Los Angeles County exceeds county limits.

Figure 2. Surface map. The surface map spikes are centered in zip codes which exceed the county limit for off sale outlets. The relative height of the spikes reflects the absolute density of alcohol outlets. The relative differences in the spikes clearly demonstrates that the highest concentrations of off-sale beer and wine outlets in south central Los Angeles.

Figure 3. Prism map. The prism map includes only the highest off-sale density

zip codes in Los Angeles County. The map effectively isolates the most problematic zip codes for a high impact visual presentation.

On-Sale Beer and Wine Outlet Maps.

Figure 4. Choro map. The choro map again gives an overview of on-sale outlet density. Compared with the off-sale outlet map the choro map demonstrates a different distribution of high density zip codes for this outlet type. The high on-sale density zip codes reflect a 10 year trend in the upscale west and coastal areas of Los Angeles to permit the proliferation of this type of outlet.

Figure 5. Surface map. This map only includes zip codes which exceed the county limit. Although there are high on-sale density spikes throughout the county the relative heights of the surface spikes demonstrate that the highest on-sale density zip codes are in west Los Angeles communities, i.e. Beverly Hills, Santa Monica, Manhattan Beach.

Figure 6. Prism map. The large number of zip codes with extremely high on-sale densities, i.e. more than twice the county density limit, of on sale beer and wine outlets demonstrates the developing situation. That is there is an increase of on-sale density outlets in west Los Angeles. Compared with the prism map for off sale beer and wine outlets it is clear that the factors which promote the different outlet types are different.

REFERENCES

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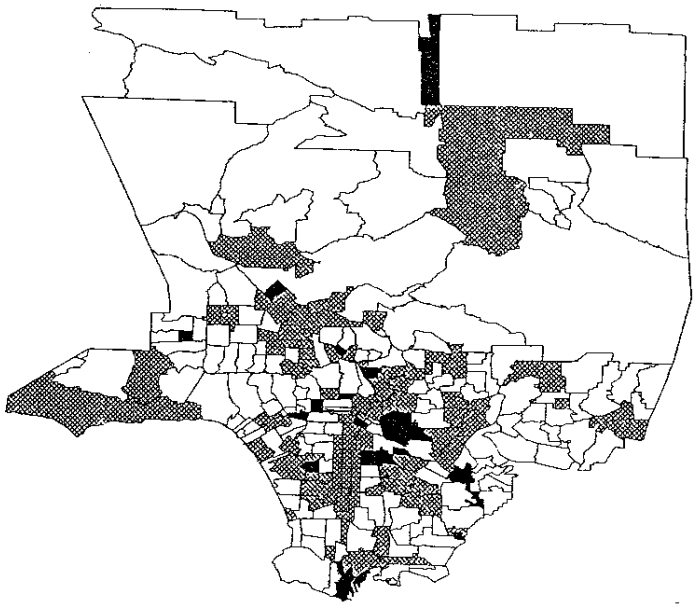
Figure 1.



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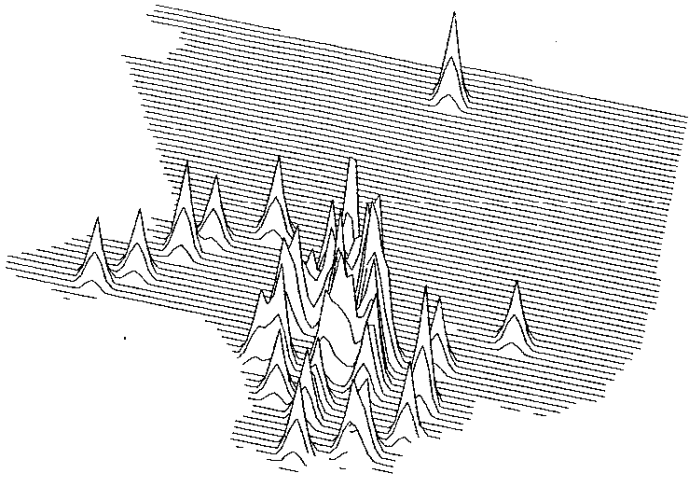

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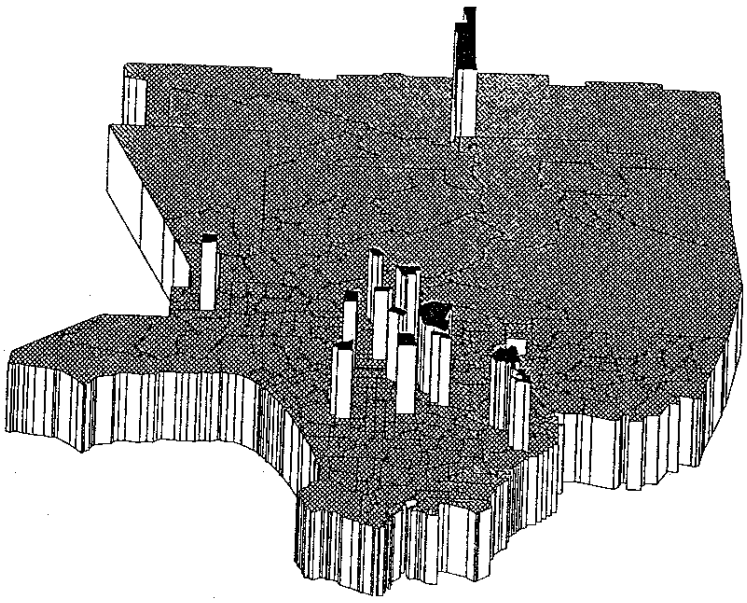

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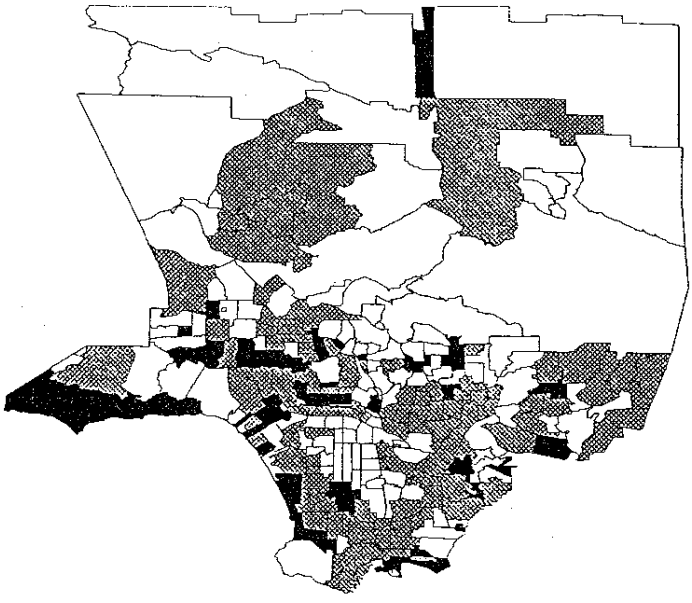

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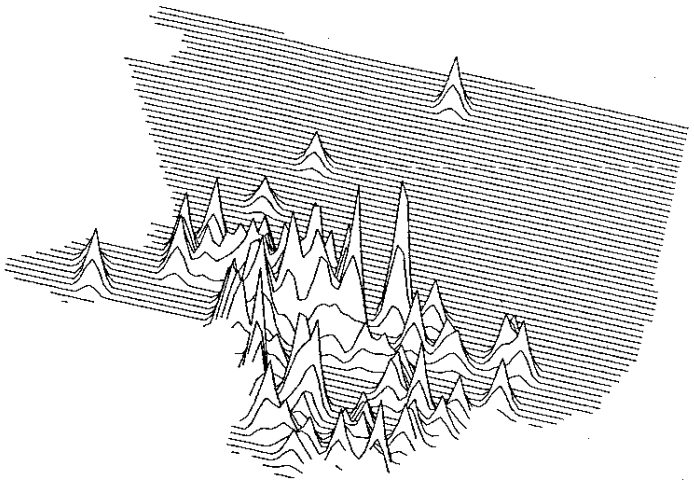

Figure 6.