Alcohol Outlet Density: Assessment Concepts

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Outline of presentation

- Public health impact of excessive alcohol use
- Community Guide review on regulating alcohol outlet density
- Measuring alcohol outlet density
- CDC Workgroup on Measuring Alcohol Outlet Density recommendations
Public Health Impact of Excessive Drinking

- 80,000 deaths every year
- 2.3 million Years of Potential Life Lost (YPLL) every year
- 3rd leading preventable cause of death
- Cost
  - $223.5 billion in economic costs (2006) or ~$1.90/drink
  - $94.2 billion (42%) paid by government or ~$0.80/drink

Most excessive drinkers are not alcohol dependent

Factors that Affect Health

Examples

- Eat healthy, be physically active
- Rx for high blood pressure, high cholesterol, diabetes
- Immunizations, brief intervention, cessation treatment, colonoscopy
- Fluoridation, 0g trans fat, iodization, smoke-free laws, tobacco tax
- Poverty, education, housing, inequality

Socioeconomic Factors

Changing the Context to make individuals’ default decisions healthy

Long-lasting Protective Interventions

Clinical Interventions

Counseling & Education

Smallest Impact

Largest Impact
CDC ALCOHOL PROGRAM

- Established in July 2001

- Public Health Surveillance on excessive alcohol use and alcohol-related conditions

- Applied research on health impacts and intervention effectiveness

- State capacity building & technical assistance

- National leadership & collaboration
Preventing Excessive Alcohol Consumption

Excessive alcohol consumption is the third leading cause of preventable death in the United States and is a risk factor for many health and societal problems. In 2006, the estimated economic cost of excessive drinking in the U.S. was $223.5 billion (Bouchery et al 2011). Approximately 5% of the total population drinks heavily and 15% of the population engages in binge drinking (CDC).

Among adults, excessive consumption can take the form of heavy drinking, binge drinking, or both.

- Heavy drinking is defined as more than two drinks per day on average for men or more than one drink per day on average for women.
- Binge drinking is defined as five or more drinks during a single occasion for men or four or more drinks during a single occasion for women.

Underage drinking can also be considered a form of excessive drinking because it is both illegal and often involves consumption in quantities and settings that can lead to serious immediate and long-term consequences.

- People aged 12 to 20 years drink 11% of all alcohol consumed in the United States. More than 90% of this alcohol is consumed in the form of binge drinks (OJJDP) [PDF - 1.08MB].

Task Force Recommendations & Findings

This table lists interventions reviewed by the Community Guide, with Task Force findings for each (definitions of findings). Click on an underlined intervention title for a summary of the review.

<table>
<thead>
<tr>
<th>Interventions directed to the general population</th>
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<td>Dram shop liability</td>
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Guide to Community Preventive Services

• Systematic reviews of effectiveness of population-based interventions:
  – Addresses many topic areas, including
  – Prevention and control of excessive alcohol consumption and related Harms

• Recommendations for policies and practices by Task Force for Community Preventive Services

• Guidance for future research
Community Guide Recommendations for Preventing Excessive Drinking, 2005-2012

- Increase alcohol taxes
- Regulate alcohol outlet density
- Dram shop (commercial host) liability
- Avoid further privatization of alcohol sales
- Maintain limits on days of sale
- Maintain limits on hours of sale
- Enhance enforcement of laws prohibiting alcohol sales to minors
- Electronic screening and brief intervention
Outlet Density Review Rationale

- Retail alcohol outlet density regulated to reduce excessive consumption and related harms
- State and local control policies variability, impact on outlet density regulation
- Healthy People 2010 Objectives for reducing Excessive Alcohol Use
Factors That Influence Alcohol Outlet Density

- Outlet Size / Sales Volume
- Local Regulations: Hours of Sale
- Related Illegal Behavior
- Number and Types of Alcohol Outlets
- Clustering
- Location
- Neighborhood Environmental Factors
- Size of the Community
## Alcohol Outlet Density
### Review Search Results

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Outlet Density Review: Primary Hypothesis

Changes in outlet density (either increases or decreases) will be directly related to changes in excessive alcohol consumption and related harms, such as violent crime and alcohol-impaired driving.
Definitions

Limiting Alcohol Outlet Density:

- Applying regulatory authority to reduce alcoholic beverage outlet density or to limit the increase of alcoholic beverage outlet density. Regulation is often implemented through licensing or zoning processes.

Alcohol Outlet:

- A setting or premise at which alcoholic beverages are legally sold.
  - On-premises outlets allow alcohol consumption;
  - Off-premises outlets do not allow consumption on-site.
The image provides information about why alcohol outlet density is a problem. It references a diverse group of studies indicating that when the density of on- or off-premises alcohol outlets is high or increases, the level of alcohol consumption is correspondingly high or increases, and excessive consumption and its diverse related harms occur. This is supported by the National Academy of Sciences and the Task Force on Community Preventive Services. For example, the American Journal of Preventive Medicine (2009) 37:6 pps. 570 – 571 Task Force on Community Preventive Services:
Findings

- **Time-series analysis** – positive association between outlet density and related harms (interpersonal violence)
- **Privatization and Re-monopolization** - privatization increases # of outlets and sale of previously regulated beverages, declines in MV crashes/alcoholism with re-monopolization.
- **Bans on sales** – reduce consumption and harms (Native American communities)
- **Density related policy changes** – more permissive licensing policies = greater consumption
- **Cross sectional studies** – relationship between density and harms, overall consumption & violent crime
Summary of Review Findings

• Consistent evidence that greater alcohol outlet density is associated with increased alcohol consumption and related harms (e.g., violent crime).

• Inconsistent evidence on MV crashes mostly due to findings from studies of alcohol bans.

• Many studies assessed the impact of relaxing controls on outlet density, including privatization of retail sales.

The Community Preventive Services Task Force recommends the use of regulatory authority (e.g., through licensing and zoning) to limit alcohol outlet density on the basis of sufficient evidence of a positive association between outlet density and excessive alcohol consumption and related harms.
Community-Level Approaches
Objectives

- Discuss key methodological issues
- Potential tools for assessment
- Develop guidance document for public health practitioners.
Workgroup Members

- **Bob Brewer, MD, MSPH, Excessive Alcohol Use Prevention Team (CDC Alcohol Program) Leader**
  - Division of Population Health, National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP), Centers for Disease Control and Prevention (CDC).

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CDC Planning Committee

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- Xingyou Zhang, PhD, MS, Geographer/Statistician, Analytic Methods Team, Division of Population Health, NCCDPHP, CDC
Steps to Assessing Alcohol Outlet Density

1. Team approach
   - Geographers, statisticians, epidemiologists, policy, IT experts

2. Obtain data on licensed outlets in defined area
   - THIS STEP IS OFTEN A CHALLENGE AND AVAILABILITY OF THE DATE VARIES BY STATE/LOCATION!
   - State liquor authority
   - Primary (in person collection, engage students or collaborators)
   - Secondary sources (commercial data on types of businesses, business records, hospital discharge data)
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Steps to Assessing Alcohol Outlet Density

3. Determine types of licenses
   - On-premise
   - Off-premise
   - Mixed

4. Geocode data
   - Addresses of outlets needed
   - Plot on map by longitude and latitude
Steps to Assessing Alcohol Outlet Density

5. Stratify outlets by type
   a. On premise (service)
   b. Off premise (retail)

Classify by purpose, not necessarily label given
6. Use geographic tools to characterize the nature of clustering
   - Standard deviational ellipse (direction and distribution) within a geographic area, over time, “hot spots”
Factors That Influence Density

Measuring *Alcohol Outlet Density* involves measuring number and location of the outlets in terms of:

- Outlets per population
- Outlets per land area
- Outlets per road mile

**NOTE:**
The *Density Mix* includes many different factors. There is no standard land area in which density is measured.
Population Measures
(# of outlets per persons in population)

- Sometimes used by licensing boards
- Usually # of outlets per 1000 persons
- Outlet density decreases as populations increase (rural areas)
- Easy to calculate, can be misleading
- Not theoretically supported
- Do not reflect convenience costs

Ex: Although the population density is the same per town in both illustrations, the changes in the proximity of the outlets to each other impacts density through availability. Outlets that are close together can function as a type of "hot spot"
Geography-Based Measures

- Aligned with concept of convenience of alcohol
- May include empty space (not retail or residential like parkland) or unused space (rural areas, undesignated space)

Area-based
- Assess spatial clustering for populated areas
- Number of outlets within 0.5 to 1 kilometer radius around each outlet or block

Network-based
- Number of outlets per square miles or per roadway mile of populated areas
- Subtract empty space, unused space
Steps to Assessing Alcohol Outlet Density

7. Conduct analyses to assess the relationships between density and harms
   - Geographically weighted regression
Prioritization of approaches

Geography Measures - PREFERRED

Population Measures – MAY BE MISLEADING
Calculation

Numerator
Outlets by type of interest or problem of concern

Denominator
Neighborhood
  Block
Census code
Zoning District
City/County Boundaries
Zip Code
Key recommendations

- Movement towards standard measures of alcohol outlet density
- Prepare guidelines on measuring alcohol outlet density for practitioners
- Consider publishing methodologically-oriented article.
Key recommendations (continued)

- Explore possibility of developing web-based tools to assist public health agencies and communities

- Conduct future meetings on how to achieve positive health and social outcomes (e.g., reduced crime, positive health outcomes, etc.)

- Explore the possibility of developing a data repository or warehouse to support the measurement of alcohol outlet density
What CDC can do?

- Provide technical assistance to State Public Health Departments
- Consider developing a web-based mapping tool that state and local health agencies can use
- Develop resource list that includes information on GIS experts at colleges and universities that can assist state and local public health staff and community groups
What CDC can do? (continued)

• Consider collaborating with Google to develop on-line tools that can be used to assess alcohol outlet density.

• Assess existing capacity within state public health agencies perhaps in collaboration with CSTE or some other partner organization.

• Support community transformation grants to address excessive alcohol use in communities, including alcohol outlet density.
What do you need?
Acknowledgments

CDC Alcohol Program

CDC NCCDPHP Workgroup on Measuring Alcohol Outlet Density members

CDC Planning Committee Members
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Telephone, 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348
E-mail: cdcinfo@cdc.gov  Web: www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.
To Sabine.
To Peter.
To LoLo.
To Cathy.
To Marc.
To The Toilet.

Alcohol. At some point, the party's over.