



retrospective analysis. *Lancet*. 2006; 368(9546):1516–1523.

3. Storeng KT, Baggaley RF, Ganaba R, Ouattara F, Akoum MS, Filippi V. Paying the price: the cost and consequences of emergency obstetric care in Burkina Faso. *Soc Sci Med*. 2008;66(3):545–557.
4. Thaddeus S, Maine D. Too far to walk: maternal mortality in context. *Soc Sci Med*. 1994;38(8):1091–1110.
5. Koblinsky M, Matthews Z, Hussein J, et al. Going to scale with professional skilled care. *Lancet*. 2006;368(9544):1377–1386.
6. Borghi J, Storeng KT, Filippi V. Overview of the costs of obstetric care and the economic and social consequences for households. In: Richard F, Witter S, De Brouwere V, eds. *Reducing Financial Barriers to Obstetric Care in Low-Income Countries*. Antwerp, Belgium: ITG Press; 2008:23–46.
7. Xu K, Evans DB, Kawabata K, Zeramdini R, Klavus J, Murray CJ. Household catastrophic health expenditure: a multicountry analysis. *Lancet*. 2003;362(9378):111–117.
8. Ensor T, Ronoh J. Effective financing of maternal health services: a review of the literature. *Health Policy*. 2005;75(1):49–58.
9. WHO. *Moving Towards Universal Coverage: Issues in Maternal-Newborn Health and Poverty*. Geneva, Switzerland: World Health Organization; 2006.
10. *The Millennium Development Goals in Africa: Progress and Challenges*. New York, NY: United Nations Economic Commission for Africa; 2005.
11. Witter S. Service- and population-based exemptions: are these the way forward for equity and efficiency in health financing in low income countries? In: Chernichovsky D, Hanson K, eds. *Innovations in Health Systems Finance in Developing and Transitional Economies*. Bingley, UK: JAI Press; 2009:249–286.
12. Borghi J, Ensor T, Somanathan A, Lissner C, Mills A. Mobilising financial resources for maternal health. *Lancet*. 2006;368(9545):1457–1465.
13. Richard F, Witter S, De Brouwere V. *Reducing Financial Barriers to Obstetric Care in Low-Income Countries*. Antwerp, Belgium: ITG Press; 2008.
14. Witter S, Armar-Klemesu M, Dieng T. National fee exemption schemes for deliveries: comparing the recent experiences of Ghana and Senegal. In: Richard F, Witter S, De Brouwere V, eds. *Reducing Financial Barriers to Obstetric Care in Low-Income Countries*. Antwerp, Belgium: ITG Press; 2008:167–198.
15. Ndiaye P, Kaba S, Kourouma M, Barry AN, Barry A, Criel B. MURIGA in Guinea: an experience of community health insurance focused on obstetric risks. In: Richard F, Witter S, De Brouwere V, eds. *Reducing Financial Barriers to Obstetric Care in Low-Income Countries*. Antwerp, Belgium: ITG Press; 2008:117–148.
16. Renaudin P, Abdelkader MO, Abdelaziz SMO, et al. Risk sharing as solution for providing access to emergency obstetric care: experience with obstetric risk insurance in Mauritania. In: Richard F, Witter S, De Brouwere V, eds. *Reducing Financial Barriers to Obstetric Care in Low-Income Countries*. Antwerp, Belgium: ITG Press; 2008:85–114.
17. Ouedraogo C, Richard F, Compaore J, et al. Cost-sharing scheme for emergency obstetric care in Secteur 30 health district, Ouagadougou, Burkina Faso. In: Richard F, Witter S, De Brouwere V, eds. *Reducing Financial Barriers to Obstetric Care in Low-Income Countries*. Antwerp, Belgium: ITG Press; 2008:49–82.
18. Por I, Horeman D, Narin S, Van Damme W. Improving access to safe delivery for poor pregnant women: a case study of vouchers plus health equity funds in three health districts in Cambodia. In: Richard F, Witter S, De Brouwere V, eds. *Reducing Financial Barriers to Obstetric Care in Low-Income Countries*. Antwerp, Belgium: ITG Press; 2008:225–255.
19. Devadasan N, Eliasa MA, Johna D, Grahacharya S, Ralte L. A conditional cash assistance programme for promoting institutional deliveries among the poor in India: process evaluation results. In: Richard F, Witter S, De Brouwere V, eds. *Reducing Financial Barriers to Obstetric Care in Low-Income Countries*. Antwerp, Belgium: ITG Press; 2008:257–274.
20. Pooley B, Ramirez M, de Hilari C. Bolivia's health reform: a response to improve access to obstetric care. In: Richard F, Witter S, De Brouwere V, eds. *Reducing Financial Barriers to Obstetric Care in Low-Income Countries*. Antwerp, Belgium: ITG Press; 2008:199–222.
21. Witter S. Experiences of policies to reduce financial barriers. In: Graham WJ, ed. *Reaching the MDG5, Reaching the Poor: Evidence From Impact*. Aberdeen, Scotland: Impact; 2008.
22. Witter S, Richard F, De Brouwere V. Learning lessons and moving forward: how to reduce financial barriers to obstetric care in low-income contexts. In: Richard F, Witter S, De Brouwere V, eds. *Reducing Financial Barriers to Obstetric Care in Low-Income Countries*. Antwerp, Belgium: ITG Press; 2008:277–304.
23. Asante F, Chikwama C, Daniels A, Armar-Klemesu M. Evaluating the economic outcomes of the policy of fee exemption for maternal delivery care in Ghana. *Ghana Med J*. 2007;41(3):110–117.
24. Encuesta Nacional de Demografía y Salud 2003 [National demographic and health survey 2003]. La Paz, Bolivia: Instituto Nacional de Estadística [National Institute of Statistics] and Ministerio de Salud y Deportes [Ministry of Health and Sports]; 2003.
25. Powell-Jackson T, Borghi J, Mueller DH, Patouillard E, Mills A. Countdown to 2015: tracking donor assistance to maternal, newborn, and child health. *Lancet*. 2006;368(9541):1077–1087.
26. Pathamanathan I, Liljestrand J, Martins JM, et al. *Investing in Maternal Health: Learning From Malaysia and Sri Lanka*. Health, Nutrition, and Population Series. Washington, DC: World Bank; 2003.

## Urban Sprawl, Smart Growth, and Deliberative Democracy

David B. Resnik, JD, PhD

Urban sprawl is an increasingly common feature of the built environment in the United States and other industrialized nations. Although there is considerable evidence that urban sprawl has adverse effects on public health and the environment, policy frameworks designed to combat

sprawl—such as smart growth—have proven to be controversial, making implementation difficult.

Smart growth has generated considerable controversy because stakeholders affected by urban planning policies have conflicting interests and divergent moral and political viewpoints. In some of these

situations, deliberative democracy—an approach to resolving controversial public-policy questions that emphasizes open, deliberative debate among the affected parties as an alternative to voting—would be a fair and effective way to resolve urban-planning issues. (*Am J*

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**IN THE LAST TWO DECADES**, public health researchers have demonstrated how the built environment—homes, roads, neighborhoods, workplaces, and



other structures and spaces created or modified by people—can affect human health adversely.<sup>1–7</sup> Urban sprawl, a pattern of uncontrolled development around the periphery of a city, is an increasingly common feature of the built environment in the United States and other industrialized nations.<sup>8</sup> Although there is considerable evidence that urban sprawl has adverse environmental impacts and contributes to a variety of health problems—including obesity, diabetes, cardiovascular disease, and respiratory disease<sup>9</sup>—implementation of policies designed to combat sprawl, such as smart growth, has proven to be difficult.<sup>10–17</sup> One of the main difficulties obstructing the implementation of smart-growth policies is the considerable controversy these policies generate. Such controversy is understandable, given the fact that the stakeholders affected by urban-planning policies have conflicting interests and divergent moral and political viewpoints.<sup>18</sup> In some of these situations, deliberative democracy—an approach to resolving controversial public-policy questions that emphasizes open, deliberative debate among the affected parties as an alternative to voting—would be a fair and effective way to resolve urban-planning issues.

## URBAN SPRAWL

Urban sprawl in the United States has its origins in the flight to the suburbs that began in the 1950s. People wanted to live outside of city centers to avoid traffic, noise, crime, and other problems, and to have homes with more square footage and yard space.<sup>8,9</sup>

As suburban areas developed, cities expanded in geographic size faster than they grew in population. This trend has produced large metropolitan areas with low population densities, interconnected by roads. Residents of sprawling cities tend to live in single-family homes and commute to work, school, or other activities by automobile.<sup>8,9</sup> People who live in large metropolitan areas often find it difficult to travel even short distances without using an automobile, because of the remoteness of residential areas and inadequate availability of mass transit, walkways, or bike paths. In 2002, the 10 worst US metropolitan areas for sprawl were Riverside–San Bernardino, CA; Greensboro–Winston-Salem–High Point, NC; Raleigh–Durham, NC; Atlanta, GA; Greenville–Spartanburg, SC; West Palm Beach–Boca Raton–Delray Beach, FL; Bridgeport–Stamford–Norwalk–Danbury, CT; Knoxville, TN; Oxnard–Ventura, CA; and Fort Worth–Arlington, TX.<sup>8</sup>

There is substantial evidence that urban sprawl has negative effects on human health and the environment.<sup>4,7,9,19</sup> An urban development pattern that necessitates automobile use will produce more air pollutants, such as ozone and airborne particulates, than a pattern that includes alternatives to automotive transportation. The relationship between air pollution and respiratory problems, such as asthma and lung cancer, is well documented.<sup>4</sup> Cities built around automobile use also provide fewer opportunities to exercise than cities that make it easy for people to walk or bike to school, work, or other activities.<sup>4</sup> Exercise has been shown to be crucial to many different

aspects of health, such as weight control, cardiovascular function, stress management, and so on.<sup>20,21</sup>

Because socioeconomically disadvantaged people in sprawling cities may have less access to exercise opportunities and healthy food than do wealthier people, sprawl may also contribute to health inequalities.<sup>22</sup> Urban sprawl can reduce water quality by increasing the amount of surface runoff, which channels oil and other pollutants into streams and rivers.<sup>4</sup> Poor water quality is associated with a variety of negative health outcomes, including diseases of the gastrointestinal tract, kidney disease, and cancer.<sup>23</sup> In addition to air and water pollution, adverse environmental impacts of sprawl include deforestation and disruption of wildlife habitat.<sup>4</sup>

## SMART GROWTH

Many public health advocates have recommended smart growth as a potential solution to the problem of urban sprawl.<sup>4,7,9,20</sup> Smart growth can be defined as a policy framework that promotes an urban development pattern characterized by high population density, walkable and bikeable neighborhoods, preserved green spaces, mixed-use development (i.e., development projects that include both residential and commercial uses), available mass transit, and limited road construction.<sup>4,7,11</sup> Smart growth was originally conceptualized as an aesthetically pleasing alternative to urban sprawl that would offer residents a high quality of life and the convenience of local amenities,<sup>24</sup> but it also has many potential health benefits, such

as diminished air pollution, fewer motor vehicle accidents, lower pedestrian mortality, and increased physical exercise.<sup>4,7</sup> Smart growth is different from the concept of “garden suburbs” because it addresses issues of population density and transportation, not just availability of green space and preservation of agricultural land.<sup>4</sup>

In the 1970s, Portland, Oregon, was the first major city in the United States to establish smart-growth urban planning by limiting urban growth to an area around the inner city.<sup>11</sup> Since the 1990s, many other urban areas have encouraged the development of planned communities in which people can live, shop, work, go to school, worship, and recreate without having to travel great distances by automobile. An example of one of these planned communities is Southern Village, situated on 300 acres south of Chapel Hill, North Carolina. Launched in 1996, Southern Village features apartments, townhouses, single-family homes, and a conveniently located town center with a grocery store, restaurants, shops, a movie theater, a dry cleaner, common areas, offices, health care services, a farmer’s market, a day-care center, an elementary school, and a church. Southern Village is a walkable community with sidewalks on both sides of the streets and a 1.3-mile greenway running through the middle of town. Southern Village residents have access to mass transit via Chapel Hill’s bus system and can enjoy free outdoor concerts in the common areas. More than 3000 people live in Southern Village.<sup>25</sup>

Urban sprawl has occurred largely because land owners and



developers have made choices that promote their own economic and personal interests, which do not necessarily coincide with the public good.<sup>18,25</sup> Many community leaders have found it necessary to engage in centralized urban planning to promote smart growth.<sup>11</sup> Various laws and regulations can help to control land use and development. One of the most useful land-use policy tools is to change zoning laws to promote mixed-use development.<sup>18</sup> Zoning laws that forbid commercial development in residential areas promote sprawl because they require residents to travel greater distances to buy groceries, shop for clothes, and so on. Zoning laws can also be written to encourage high-density development and to require sidewalks and bike lanes.

Another important policy tool for promoting smart growth is to take steps to prevent development outside of a defined urban area, such as forbidding new housing construction on rural land, or setting administrative boundaries for city services, such as water and sewer connections.<sup>18</sup> The government can also use economic incentives to promote smart growth. Developers that follow smart-growth principles can be deemed eligible for reduced fees that help offset the costs of smart-growth development, such as environmental impact fees. Conversely, developers that do not follow smart-growth principles can be subjected to higher fees.<sup>18</sup> Finally, governments can also invest public funds in projects and land uses that facilitate smart growth, such as mass-transit systems, recreation areas, and schools

conveniently situated in neighborhoods.<sup>2</sup>

## OBJECTIONS TO SMART GROWTH

Although smart growth appears to be a promising alternative to urban sprawl that could benefit public health and the environment, it has met with stiff resistance in some communities.<sup>11,13,15,18,26</sup> The following are five of the most frequently voiced objections to smart-growth philosophies and policies:

1. **Smart growth can decrease property values.**<sup>11–13</sup> Property values may be adversely affected when high-density housing units are built in an area where low-density housing prevails because the increase in population density may exacerbate local traffic, congestion, and crime, which reduces property values. Property values may also be negatively affected by commercial development in a residential area, because commercial development can increase traffic and crime. **Crime may also increase when mass transit connects a residential area to a location where crime is more prevalent, such as the inner city.**
2. **Smart growth can decrease the availability of affordable housing.**<sup>14,15</sup> Requiring developers to build planned communities with mixed uses, sidewalks, recreation areas, and bike paths may increase the cost of housing. Also, setting aside large undeveloped spaces can limit land available for development, which drives up the price of housing.

3. **Smart growth restricts property owners' use of their land.**<sup>10,17,27,28</sup> Suburbanites have complained that laws requiring residential areas to have sidewalks and bike paths deprive them of lawn space. Farmers have protested against laws that prevent development of large portions of agricultural and forest land because this interferes with their rights to sell the land.
4. **Smart growth can disrupt existing communities.**<sup>11,12,29,30</sup> Low-density, quiet, noncommercial living areas may become high-density, noisy, and commercial. Historically low-income minority communities may be displaced to make room for high-rise, smart-growth housing complexes and upscale commercial development.
5. **Smart growth may increase sprawl instead of decreasing it.**<sup>11,14</sup> Some opponents of smart growth have argued that it often fails to achieve its intended effect and can actually exacerbate sprawl, traffic, congestion, pollution, and other urban problems.

Proponents of smart growth have responded to these and other objections at meetings of county planning boards and city councils, but opposition remains strong. Though smart growth has been a popular buzzword in real estate and urban development since the 1990s, some leaders of the movement worry that it has lost momentum.<sup>13,16</sup> One reason why smart growth has stalled is that key stakeholders involved in the debate—real estate developers, land owners, environmentalists, public health advocates, and

people living in metropolitan areas affected by smart-growth projects—have divergent interests, and the political process has often been unable to resolve these conflicts.<sup>18</sup>

## DELIBERATIVE DEMOCRACY

One approach to resolving controversial public-policy questions that may be able to help loosen the smart-growth gridlock is a procedure known as deliberative democracy. Democracy is a form of government in which citizens wield political power by directly voting on issues, as in referendums, or by electing representatives to make decisions on their behalf.<sup>31</sup> Deliberative democracy emphasizes public deliberation on controversial issues as an alternative to voting.<sup>31–34</sup> In deliberative democracy, public deliberation should meet five conditions<sup>31–34</sup>:

1. **Political legitimacy.** The parties to the deliberation view the democratic process as a source of political legitimacy and are willing to abide by the decision that is reached.
2. **Mutual respect.** The parties are committed to respecting each other's diverging interests, goals, and moral, political, or religious viewpoints.
3. **Inclusiveness.** All parties with an interest in the issue can participate in the deliberative process, and a special effort is made to include those parties who often lack political influence because of socioeconomic status, lack of education, or other factors.



4. **Public reason.** Parties involved in the deliberation are committed to giving publicly acceptable arguments for their positions, drawing on publicly available evidence and information.
5. **Equality.** All parties to the deliberation have equal standing to defend and criticize arguments; there is no hierarchy or presumed line of authority.

Deliberative democracy was originally proposed as a method for resolving disagreements on controversial topics for which interested parties have conflicting interests and incompatible moral or political viewpoints, such as abortion, euthanasia, and capital punishment. Proponents of deliberative democracy have argued that public deliberation about controversial topics can be more fair and effective than can traditional democratic procedures, which can be manipulated by powerful interest groups.<sup>31–34</sup> Critics of deliberative democracy have argued that it is an idealized theory of political decision-making whose conditions are often not met in the real world.<sup>35</sup> However, deliberative democracy may be worth trying when other approaches have failed to resolve controversial issues.

The debate about smart growth appears to be a good candidate for application of a deliberative approach because the parties have conflicting interests and divergent moral and political viewpoints.<sup>10,11,18,28</sup> Proponents of

smart growth typically argue that collective action must be taken to promote common goods, such as public health, environmental

integrity, or overall quality of life.<sup>4,5,7</sup> This type of argument is utilitarian in form because it asserts that public policies should promote the overall good of society.<sup>36,37</sup>

Many of the property owners who oppose smart growth assume a libertarian perspective and argue that individual rights may be restricted only to prevent harm to others, not to promote the good of society.<sup>18</sup> According to libertarianism, the role of the state is to protect individual rights to life, liberty, or property; thus, government authority should not be used to redistribute wealth or advance social causes.<sup>38,39</sup> Critics who are concerned that smart growth may reduce the availability of affordable housing or adversely affect minority neighborhoods may subscribe to an egalitarian philosophy, such as Rawls's theory of justice, which holds that public policies should promote the interests of the least advantaged people in society and should not undermine equality of opportunity.<sup>40,41</sup> If smart growth benefits society as whole at the expense of harming its least advantaged members by reducing the availability of affordable housing or disrupting minority neighborhoods, then it would violate Rawls's egalitarian principles of justice. Thus, the debate about smart growth can be viewed as a conflict among three competing visions of social justice: utilitarianism, libertarianism, and egalitarianism.

### DELIBERATING ABOUT SMART GROWTH

Smart growth is an important strategy for combating the adverse

public health, environmental, and aesthetic effects of urban sprawl. Because proponents and opponents of smart growth have conflicting interests and divergent moral and political viewpoints, deliberative democracy may be a fair and effective procedure for addressing some of the controversies surrounding policy proposals designed to counteract urban sprawl. To implement a deliberative approach, governments should sponsor open community forums on issues related to sprawl and smart growth, such as focus groups, public debates, and town-hall meetings. The deliberations that occur at these public forums should supplement the discussions that take place on county planning board or city council meetings. The goal of these public forums should be to foster open debate, information sharing, constructive criticism, and mutual understanding. Forums should be well-publicized and open to all parties with an interest in the proceedings. A special effort should be made to invite participants from groups that lack political influence.<sup>42</sup> Many communities have already held open forums on smart growth that embody some of the principles of deliberative democracy, but many others have not.<sup>11,18,26</sup> Communities that have not tried the deliberative approach should attempt it; those that have already held open forums should continue deliberating. ■

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### References

- Fitzpatrick K. *Unhealthy Places*. New York, NY: Routledge; 2000.
- Frank L, Engelke P, Schmid T. *Health and Community Design: The Impact of the Built Environment on Physical Activity*. Washington, DC: Island Press; 2003.
- Jackson RJ. The impact of the built environment on health: an emerging field. *Am J Public Health*. 2003;93(9):1382–1384.
- Frumkin H, Frank L, Jackson R. *Urban Sprawl and Public Health*. Washington, DC: Island Press; 2004.
- Corburn J. Confronting the challenges in reconnecting urban planning and public health. *Am J Public Health*. 2004;94(4):541–546.
- Rao M, Prasad S, Adshead F, Tissera H. The built environment and health. *Lancet*. 2007;370(9593):1111–1113.
- Jackson R, Kochtitzky C. Creating a healthy environment: the impact of the built environment on public health. Atlanta, GA: Centers for Disease Control and Prevention; 2009. Available at: <http://www.cdc.gov/healthyplaces/articles/Creating%20A%20Healthy%20Environment.pdf>. Accessed July 12, 2009.
- Ewing R, Pendall R, Chen D. Sprawl scores for 83 metropolitan regions. Washington, DC: Smart Growth America; 2002. Available at: <http://www.>



smartgrowthamerica.org/sprawlindex/chart.pdf. Accessed July 24, 2009.

9. Frumkin H. Urban sprawl and public health. *Public Health Rep.* 2002;117(3):201–217.

10. Whoriskey P. Planners' brains vs. public's brawn: neighbors' hostility to dense projects impairs Md. land preservation. *Washington Post.* August 10, 2004:A1. Available at: <http://www.washingtonpost.com/wp-dyn/articles/A52900-2004Aug9.html>. Accessed December 10, 2009.

11. Harris J, Evans J. Sprawl brawl: battle lines drawn in smart growth debate. *Real Estate Issues*, April 2000. Available at: <http://recenter.tamu.edu/pdf/1371.pdf>. Accessed July 26, 2009.

12. Waite D. It's not smart growth. *Gainesville Sun.* May 22, 2009. Available at: <http://www.gainesville.com/article/20090522/NEWS/905229984>. Accessed July 25, 2009.

13. Ward B. Report: smart growth failing. *Carroll County Times.* March 11, 2009. Available at: [http://www.carrollcountytimes.com/article\\_4e9dc828-6126-5ffb-9fbf-33a673b3a924.html](http://www.carrollcountytimes.com/article_4e9dc828-6126-5ffb-9fbf-33a673b3a924.html). Accessed July 26, 2009.

14. Staley S. The peril and promise of smart growth: is Ohio ready for regional planning? Columbus, OH: Buckeye Institute; July 2004. Available at: <http://www.buckeyeinstitute.org/docs/smartgrowth72304.pdf>. Accessed December 10, 2009.

15. Orski C, Shaw J. Smart growth? Sprawl-reducing policies suffer setback. *Rocky Mountain News.* July 9, 2005. Available at: <http://www.perc.org/articles/article575.php>. Accessed December 10, 2009.

16. Hirschhorn J. Why the smart growth movement will fail. Planetizen Web site. Available at: <http://www.planetizen.com/node/55>. Published June 17, 2002. Accessed December 10, 2009.

17. Berg N. Suburban officials try to build sidewalks amid local opposition. Planetizen Web site. Available at: <http://www.planetizen.com/node/26436>. Published August 21, 2007. Accessed December 10, 2009.

18. Ramirez de la Cruz E. Local political institutions and smart growth: an empirical study of the politics of compact development. *Urban Aff Rev.* 2009;45(2):218–246.

19. Frumkin H. Health, equity, and the built environment. *Environ Health Perspect.* 2005;113(5):A290–A291.

20. Committee on Environmental Health, Tester JM. The built environment: designing communities to promote physical activity in children. *Pediatrics.* 2009;123(6):1591–1598.

21. Sallis JF, Glanz K. Physical activity and food environments: solutions to the obesity epidemic. *Milbank Q.* 2009;87(1):123–154.

22. Gordon-Larsen P, Nelson M, Page P, Popkin B. Inequality in the built environment underlies key health disparities in

physical activity and obesity. *Pediatrics.* 2006;117(2):417–424.

23. Barzilay J, Weinberg W, Eley J. *The Water We Drink: Water Quality and Its Effects on Health.* Piscataway, NJ: Rutgers University Press; 1999.

24. Fox W, ed. *Ethics and the Built Environment.* New York, NY: Routledge; 2000.

25. Southern Village Web site. Southern Village: a new old neighborhood. Available at: [http://www.southernvillage.com/images/sv\\_history.pdf](http://www.southernvillage.com/images/sv_history.pdf). Published November 12, 2006. Accessed July 24, 2009.

26. Downs A. Smart growth: why we discuss it more than we do it. *J Am Plann Assoc.* 2005;71(4):367–378.

27. Gilroy L. The human face of smart growth opposition. Reason Foundation Web site. Available at: <http://reason.org/news/show/the-human-face-of-smart-growth>. Published September 13, 2002. Accessed December 11, 2009.

28. Utt R. Can both sides of the sprawl debate find common ground on property rights? Heritage Foundation Web site. Available at: <http://www.heritage.org/research/smartgrowth/wm730.cfm>. Published April 25, 2005. Accessed July 26, 2009.

29. Campbell C. Faulty towers? Construction revives gentrification fears. *Chapel Hill News.* March 4, 2009:A1.

30. Campbell C. Vandals try to fight Greenbridge condos. *News and Observer.* April 28, 2009:B1.

31. Gutmann A, Thompson D, eds. *Why Deliberative Democracy?* Princeton, NJ: Princeton University Press; 2004.

32. Gutmann A, Thompson D. *Democracy and Disagreement.* Cambridge, MA: Harvard University Press; 1998.

33. Cohen J. *Philosophy, Politics, Democracy.* Cambridge, MA: Harvard University Press; 2009.

34. Rawls J. *Political Liberalism.* New York, NY: Columbia University Press; 1993.

35. Fishkin J, Laslett P. *Debating Deliberative Democracy.* Somerset, NJ: Wiley-Blackwell; 2003.

36. Mill J. *Utilitarianism.* 2nd ed. Indianapolis, IN: Hackett; 2002.

37. Singer P. *Practical Ethics.* 2nd ed. Cambridge, UK: Cambridge University Press; 1999.

38. Nozick R. *Anarchy, State, and Utopia.* New York, NY: Basic Books; 1974.

39. Boaz D. *Libertarianism: A Primer.* New York, NY: Free Press; 1998.

40. Rawls J. *A Theory of Justice.* Cambridge, MA: Harvard University Press; 1971.

41. Daniels N. *Just Health.* Cambridge, UK: Cambridge University Press; 2007.

42. Shrader-Frechette K. *Environmental Justice.* New York, NY: Oxford University Press; 2002.

## Gun Shows and Gun Violence: Fatally Flawed Study Yields Misleading Results

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A widely publicized but unpublished study of the relationship between gun shows and gun violence is being cited in debates about the regulation of gun shows and gun commerce. We believe the study is fatally flawed.

A working paper entitled “The Effect of Gun Shows on Gun-Related Deaths: Evidence

from California and Texas” outlined this study, which found no association between gun shows and gun-related deaths. We believe the study reflects a limited understanding of gun shows and gun markets and is not statistically powered to detect even an implausibly large effect of gun shows on gun violence.

In addition, the research contains serious ascertainment and classification errors, produces results that are sensitive to minor specification changes in key variables and in some cases have no face validity, and is contradicted by 1 of its own authors' prior research. The study should not be used as evidence

in formulating gun policy. (*Am J Public Health.* 2010; 100:1856–1860. doi:10.2105/AJPH.2010.191916)

**IN EARLY OCTOBER 2008, THE** National Bureau of Economic Research posted on its Web site a working paper by Duggan et al. titled “The Effect of Gun Shows on