Fordham Urban Law Journal

Volume 1 | Number 2 Article 1

1972

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Cover Page Footnote
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RESIDENTIAL DENSITIES: A PATCHWORK PLACEBO

*Stephen Sussna**

IMPROPER applications of the concept of residential density are responsible for many major American problems. Housing, transportation and other public facilities are all seriously and adversely affected by careless or unwise density planning.

This article will examine the importance of residential density planning in today's society and the misapplications of this concept which have led to serious inequities in the population distribution of major American urban areas. The article will also discuss, in some detail, one of the great obstacles to the achievement of a rational population distribution, namely, exclusionary zoning ordinances. Finally, it will evaluate the future of density planning, specifically examining "ideal densities" and "efficient design for new communities" as well as the judicial implications of the problem. Several recommendations will also be made which, if implemented, would alleviate some of the difficulties that permeate current practices in density planning.

Importance of Residential Density Planning

In discussing the concept of residential density planning, Professor Lewis Keeble of the Royal Australian Planning Institute has stated:

> [T]his is a subject of very great importance . . . control of residential density is fundamental to any effective town planning while the layout of a residential area has, perhaps, the strongest and most direct influence on the happiness and well-being of the people of any planning tool.[1]

Before inquiring further into the importance of residential density, it is necessary to define the term in greater detail. *Planning the Neighborhood*,[2] a work of enormous influence on residential environmental plan-

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1. L. Keeble, Residential Density and Layout, 9 Royal Australian Planning Institute J. No. 3, at 82 (July, 1971).

2. Committee on the Hygiene of Housing, American Public Health Association, Planning the Neighborhood (1960).

ning and development throughout the United States and elsewhere,[3] offers the following definition of density: "The number of units (persons, families, dwellings or rooms) per acre (or square mile)."[4] Density then is a measurement of the number of housing units or people for a specified area of land. This system of measurement can pertain to gross land area (the entire acre or parcel of land) or net land area (only that portion specifically devoted to residential uses excluding area devoted to streets, community facilities, open spaces and recreational areas).

An understanding of the overall concept of residential density is more complex, however, and necessarily includes an investigation into the number of families and the density of rooms within dwellings to insure that all rooms, and the persons within them, get sufficient light, air and sunshine.[5] Also to be considered is the amount of open space near dwellings that can be used for recreational and aesthetic purposes.

In America density control has been achieved through the use of zoning regulations. These regulations not only control the use to which land is put but also designate the "bulk" of buildings (*i.e.*, their placement, size and shape) on the land in question. They were designed to achieve three basic objectives: adequate daylighting of buildings; control over population density in living and work areas; and provision for open space.

Originally, density control in zoning was motivated primarily by fears of congestion and exploitation of land. For more than a century, Manhattan had a grim history of slum building.[6] The first building delib-

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3. A. A. Solow, C. C. Hann, E. O. Donnelly, The Concept of the Neighborhood Unit 5, 36, 37 (1969).

4. Planning the Neighborhood, supra note 2, at 74.

5. E. M. Bassett, Zoning (1940). Bassett stated that: "[I]t was found that in addition to its regulation of height, area, and use, zoning should be applied to another field—the density of population. . . . The difficulty was that there was nothing to control the crowding of a large number of families into a building that complied with all the area requirements. . . . The courts pointed out that the regulation of density of population required an added grant of power from the state legislature to the municipality. [Bassett here cites Barker v. Switzer, 209 App. Div. 151, 205 N.Y.S. 108 (2nd Dep't 1924)]. The result was that the field of density of population was included in new enabling acts, and some of the old ones were amended." Id. at 28. More recently, courts have shown greater concern for the concept of residential density. See, e.g., Coronet Homes, Inc. v. McKenzie, 84 Nev. 250, 439 P.2d 219 (1968), in which Nevada's highest court held that zoning for density control is a legitimate exercise of the police power of a county.

6. L. Mumford, From the Ground Up 123-30 (1956).

erately designed as a crowded tenement was erected in 1835.[7] In 1855, the first "model tenement" contained so many unlighted and unventilated rooms that it attracted as its residents those who intentionally walk in darkness—thieves and prostitutes.[8] The "dumb-bell" tenement, the result of a model tenement competition in 1879, followed a ground plan which provided two narrow side courts at the middle of the site. Windows on one side of the court looked dismally out upon the window on the other side of the court only a short distance away. The lack of light, air, open space and privacy inherent in such a design was often aggravated by a nearby elevated train.[9] At the risk of understatement, it is clear that the housing and zoning reformers of that day had a real basis for concern.[10]

Even now, when the focus of the *cognoscenti* is upon large-acreage minimums and other manifestations of wasteful exclusionary zoning, the exploitation of land by over-intensive use is still possible. For example, one of the features of Staten Island, New York zoning during the 1916 to 1960 period (when the island was still "sparsely" populated) was that too much land was zoned for multi-family dwellings.[11] In 1960, Staten Island was zoned to hold 7,425,000 persons, when its population was about 222,000.[12] Regional Plan Association data indicates that the vacant land for multi-family use in 1960 constituted 56.4 per cent of the total land zoned for all residential use in Staten Island.[13] Answering questions concerning the changes to be brought about by the complete rezoning of the 1960's, James Felt, the Chairman of New York City's Planning Commission, said that "new high use developments previously permitted across the Island are now limited to one half of one per cent of the borough's total area."[14] This was, of course, at a time when accessi-

7. Id. at 125.

8. Id.

9. In 1970 the dumbbell tenements were still there, but the elevated train system was not.

10. S. Sussna, Fifty Years of Zoning, 52 A.B.A.J. 1030 (1966).

11. Existing Zoning Map, (Dec. 1958) (in the files of the Land Use Section, New York City Planning Department); Voorhees, Walker, Smith, Smith, Area Statistics (Apr. 1957) (memorandum in the files of the Land Use Section, New York City Planning Department).

12. See N.Y.C. Planning Dep't Newsletter (Jan. 1960).

13. Regional Plan Ass'n, Spread City—Projections of Development Trends and the Issues They Pose: The Tri-State New York Metropolitan Region, 1960-1985, at 40 (1962).

14. J. Felt, Sensible Zoning Protects Borough from Haphazard Growth, Staten Island Advance, Apr. 28, 1962, at 20, col. 3.

bility to and within the Island was to be greatly increased by the Verrazano Bridge, many major roads and other important improvements. It was also a time when housing for New Yorkers was desperately needed.

While the problem of low residential densities is predominant in the suburbs, a method of controlling the problem of congestion is required in the cities. Such a method must be related to reducing traffic problems and providing a sensible basis for planning municipal services, schools, sewers, etc.[15] Rutgers Law Professor Norman Williams Jr. notes that:

> [D]aylighting of buildings and open space provisions are supplementary to density controls but no less vital, for they are also aimed at increasing the amenity of city life and correlated with density controls, at the abolition of blighted areas.[16]

Despite the many difficulties of a congested urban area, it should be apparent that the larger the number of people living or working in a particular area, the more likely is the interaction among individuals. Conversely, low densities not only tend toward less interaction, they also spell dire financial consequences for transportation and other vital services. Maintaining that "uniform low density has more advantages than most European planners might think," Peter Hall, an investigator of seven great urban regions, still wrote "but [low density] is expensive, it involves long distances in travel, and it does not readily provide for accidental contact between people and people, or people and things, for political identity, or for a visually satisfying environment."[17]

Clearly, therefore, the relationship between people and the amount of land needed for their accommodation is a fundamental problem of land use planning. Striking balances to provide inexpensive housing accommodations while providing adequate living conditions requires complex work. Not only are development costs involved; the appearance of residential areas and the cost of repairs and maintenance need to be taken into account. The blending of dwelling types and sizes to provide the highest occupancy rate consistent with comfortable living is a job that not only demands technical skill; it is also one that is hampered throughout the nation by formidable forces.[18] While these forces foster exclusionary

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15. R. Lewis, The Selection of Retail Locations 311-12 (1958).
16. N. Williams, Jr., The Structure of Urban Zoning 69 (1966).
17. P. Hall, The World Cities 236 (1966).
18. See S. Sussna, Blending Housing and Open Space, 13 Current Municipal Problems 203-10 (1971).

zoning, the discrepancy between white middle-class suburban housing and housing provided for central city blacks is readily apparent.

Land to be used for residential development competes with the needs of agriculture, commerce, industry, open space and other purposes. Factors without end could be brought into a thorough examination of the relationship between density and cost. What are the costs of different density arrangements to residents, builders, taxpayers, those needing housing? Obviously, the cost per capita for land, sewerage, transportation, educational facilities and public services is higher in low density patterns.

There are also cost arguments against high density—building and other costs of high-rise apartments are excessive. Arguments can also be made that such intangible items as loss of seclusion, loss of quiet, and lack of play spaces for children are important factors, although difficult or impossible to convert into monetary terms. The intricate relations between different types of density and different costs must be thoroughly investigated. To carelessly exhaust the supply of land in the United States is unpardonable ignorance.

Manifestations of Irresponsibility

With a supply of 1.9 billion acres of land in the United States, more than adequate to cope with even a 60 million increase in population, there clearly is no absolute shortage of land.[19] Indicators, however, point to the fact that most people will want to reside in metropolitan areas. Empty lands in North Dakota or Wyoming are not going to be of much help to those who want to live in northern New Jersey or the Washington, D.C. metropolitan area. Though there are vast quantities of land even within metropolitan areas, the chaotic nature of urban growth has resulted in wasteful population density patterns. One study found that ninety-nine per cent of the vacant land in the twenty largest metropolitan areas is located outside the central cities.[20] This type of development, called sprawl, is unconscionable; yet it is allowed to continue, causing ruination of existing metropolitan areas. Since approximately ninety-six per cent of those persons in metropolitan areas outside of the central cities are white, and the percentage of blacks in the central cities is continually increasing, two distinct racial societies are dangerously developing in the United States.[21]

19. W. H. Whyte, Jr., Urban Sprawl in The Exploding Metropolis 116 (Editors of Fortune ed. 1958).

20. Snob Zoning, The New Republic, Dec. 20, 1969, at 7.

21. Note, Snob Zoning: Must a Man's Home Be a Castle, 69 Mich. L. Rev. 339 (1970).

One of the major factors contributing to this ruination is exclusionary or "snob" zoning ordinances. The most common type of ordinance sets a high (1 acre or more) minimum on the size of lots within the community. This type of density regulation is widespread. For example, fifty per cent of the vacant land zoned for residential use within fifty miles of New York City is designated with a minimum lot size requirement of at least one acre, and eighty per cent of the land is limited to lots of at least one-half acre.[22]

The pattern of large lot zoning is common to large cities throughout the nation. For example, one survey reveals that assuming the present levels of demand in St. Louis County, Missouri, there is a 350 year supply of one acre lots. At the same time there is only a four year supply of one-third acre lots.[23] From a special report dealing with another mid-west community we find the following:

> In the northeast sector, the [1 acre residential] zone is tending to maintain a low density. . . . [T]his portion of the study area is without sanitary sewers and also retains streets in serious need of improvement. Thus the zoning and the resulting low density is discouraging the provision of these public services [to this area] due to the financial burden which would be placed upon the residents involved.[24]

Large lot zoning also imposes substantial costs that are sometimes beyond the average homebuyer's means.[25] In the St. Louis County, Missouri area an estimate of an additional $1 million per year was attributed to large lot zoning.[26] These additional costs affect the budgets of both the homeowner and local government. The Douglas Commission report, advocating a reduction in lot sizes so that the remaining area could be consolidated into open spaces for general community use, offers the following cogent arguments:

> A homeowner can't do much more with a one-acre lot than he does with a half-acre . . . except to spend more time mowing grass and pulling weeds. But with 150 acres of parkland just beyond his backyard, he can hike and cycle, play ball and tennis, swim or even ski and ride horseback.[27]

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22. Note, Exclusionary Zoning and Equal Protection, 84 Harv. L. Rev. 1645 n.5 (1971).

23. Id.

24. Decatur, Illinois, Dep't of Community Dev., The Homewood-Lakeside Area: Land Use and Zoning Study, Special Report No. 26, at 40 (1971).

25. Ass'n of Bay Area Governments, Development Regulations and Housing Costs 30, 49 (Berkeley, Cal. 1970).

26. Exclusionary Zoning and Equal Protection, supra note 22, at 1645 n.5. See also Current Review 6 (Nov. 1969).

27. Nat'l Comm'n on Urban Problems, Zoning Controversies in the Suburbs, Research Report No. 11, at 53 (1968).

In this instance the cluster plan presented by the subdivision developer would have benefited the municipality by decreasing 12,000 feet from the total length of access roads required under a conventional subdivision. The town then would have saved about $6,000 a year in road maintenance, as well as half the cost of maintaining storm drains and waterlines. Of course, the number of school children from an equal number of houses differing only as to lot size would be approximately the same.

Although the issues of rising school costs, diminishing tax bases and resources, and fears of invading black and poorer residents are formidable factors in explaining low residential densities, we must recognize (as the Douglas Commission did) that many Americans consider the large lot desirable in that they believe it produces "an aesthetically pleasing environment, protects residential areas from the noise and dangers of heavy vehicular traffic, and provides space for privacy and leisure activities of both adults and children."[28] The quest for uniformity or large lot sizes may also be due to a desire for neighborhood stability. Although the weight of this factor has not been ascertained (and may not be ascertainable), it cannot be ignored. Neighborhood stability is sought by the would-be owner who may well plan to spend the rest of his life there or who, alternatively, may seek to protect the resale value of his property should he move. The Douglas Commission report indicates that if a purchaser buys in a community where a large-lot zoning policy is maintained or reinforced, he anticipates that later residential development will be priced at least as high as his own property.[29] Suburbanites strongly believe that by the use of the single device of large-lot zoning they can achieve several important and desirable objectives.

> The community will be beautiful, its taxes will be low, and "undesirables" will be kept out. Minimum lot-size zoning requirements become the keystone of the arch, the focus of strong pressures for larger and larger lots, an extraordinarily salient feature of the suburban political process.[30]

Even if the fiscal problems of municipalities decrease considerably, it may very well be that the public's attachment to large-lot zoning will remain steadfast because of its other desirable features.

Additionally, despite the many vigorous attempts by the leadership of the National Association of Home Builders and the Urban Land Institute

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28. Nat'l Comm'n on Urban Problems, Fragmentation in Land-Use Planning and Control, Research Report No. 18, at 13 (1969).

29. Id.

30. J. G. Coke and C. S. Liebman, Political Values and Population Density Control, 37 Land Economics 355 (Nov. 1961) (footnote omitted).

to apprise developers of good design,[31] it must be acknowledged that very often development layouts that are submitted by developers are at best mediocre. Harold Miller, the long standing Tennessee State Planning Commissioner, reflects the opinion of many on this topic when he maintains that, "most developers do not want to understand. They are after prompt profit and do not want to tie up capital."[32] Since land speculation was and is an important feature of the land market mechanism, sensible site planning and engineering have too often suffered as a consequence.[33]

Another reason for the overabundance of lots that are presently too large is a reaction to the speculative Twenties (and before) when too many ridiculously small lots were created. For example, when this writer and a colleague investigated the records of the U.S. National Resources Committee, we found that four decades ago Chicago had enough platted suburban land to house 18 million people. The Committee's records further found that outside of St. Louis there were over 100,000 small vacant lots, that in Putnam County, New York, in the northern part of Westchester County, New York, and along the New Jersey coast, thousands upon thousands of 20 and 25 foot lots were sold by newspapers as part of their subscription campaigns. According to the U.S. National Resources Committee, "these random illustrations are samples of the process that has taken place in practically every State."[34] In the decade of the Twenties, when zoning controls were spreading throughout the nation in proverbial wildfire fashion, practically no control was exercised over the size of these lots and the amount of land purchased for premature subdivisions.

Despite this overabundance of small lots, in the suburbs there has always been concern over apartment buildings. Even the United States Supreme Court, in *Village of Euclid v. Amber Realty Co.*,[35] stated that

31. One example of a useful design that has been available for more than a decade, and that is seldom used, may be found in a report prepared by the Urban Land Institute. See Urban Land Institute, New Approaches to Residential Land Development: A Study of Concepts and Innovations, Technical Bulletin 40 (Washington, D.C. 1961).

32. Nat'l Comm'n On Urban Problems, Problems of Zoning and Land Use Regulations, Research Report No. 2, at 42 (1968).

33. See S. Sussna and J. Kirchoff, The Problem of Premature Subdivision, 39 Appraisal J. 592-601 (1971).

34. 2 U.S. Nat'l Resources Comm., Supplementary Report of the Urbanism Comm. to the Nat'l Resources Comm., Urban Planning and Land Policies 217-19 (1939-40).

35. 272 U.S. 365 (1926).

apartment houses under certain circumstances "come very near to being nuisances."[36] Incidentally, it should be recognized that although the question of the constitutionality of zoning has been settled since the *Euclid* case, until recently courts have generally ignored the requirement that zoning be in accord with a comprehensive plan.[37] Though much has been made of the enlightened judicial attitude opposing exclusionary zoning, Professor Robert H. Freilich and Mr. G. Allen Bass are correct when they write that courts have for the most part used "an inward set of restrictions adopted to abet a municipality's fiscal and social views without regard to the effect of the policies on the urban society."[38] Viewing the occupancy of tenements in an historical context, it may be that judges of an earlier period felt little sympathy with the new immigrants that were housed in these structures.[39] Babcock and Bosselman cogently observe that, "while to the immigrant the tenement was 'home,' to the landlord it was a piece of income-producing real estate; only the single-family house was home. The judges absorbed the landlords' viewpoint."[40] Nor were the courts without findings that multi-family housing produced con-

36. Id. at 395.

37. W. Blucher, Is Zoning Wagging the Dog, Planning 96, 100 (1955) (ASPO 1956).

38. Freilich and Bass, Exclusionary Zoning: Suggested Litigation Approaches 3 Urban Lawyer 347 (1971). See Golden v. Planning Bd., 30 N.Y.2d 359, 285, N.E.2d 291, 334 N.Y.S.2d 138 (1972) wherein the town of Ramapo in Rockland County, New York had its unique timed development ordinance upheld. Ramapo, faced with growth problems typical of many suburban communities, enacted the ordinance as a control measure in 1969. The ordinance provided that a residential developer must secure a special permit from the town board prior to applying for subdivision plat approval. The town board could either grant or deny such a permit by measuring availability to the subdivider of five essential public services, namely, sanitary sewers or substitute disposal means, drainage facilities, public schools and parks, state, county and town road nets, and fire department protection. "Points" were assigned for the degree of availability of each and permit issuance was contingent upon the cumulative effect of such service availability. Thus, the density of residential development was linked directly to the practical provision of necessary public services. The New York Court of Appeals stressed the desirability of avoiding premature subdivision and urban sprawl in such a fast growing municipality as Ramapo. See also Watson v. Mayflower Property, Inc., 223 So. 2d 368 (Fla. Dist. Ct. App. 1969), in which the court, upholding the municipality's Zoning power, stressed the municipal objectives of avoiding too high a density of population and the prevention of excessive traffic.

39. R. F. Babcock and F. P. Bosselman, Suburban Zoning and the Apartment Boom, 111 U. Pa. L. Rev. 1040, 1044 (1963).

40. Id. at 1044-45.

gestion[41] and other undesirable features. What emerged was the generally unchallenged segregation of apartment buildings from single-family residences.[42] The device often used to prevent the integration of apartments and single-family dwellings was to designate a zone for apartments that was completely undesirable for single-family or any other residential use.[43] Many municipalities and counties have virtually excluded multi-family dwellings from their borders. For example, in a study of exclusionary zoning in suburban northeastern New Jersey, the percentages for multi-family housing were as follows: Morris County 0.8; Somerset County 1.0; Middlesex 0.006; Monmouth 0.004. The total acreage of these four highly accessible counties is 1,003,904; the total acreage allocated to multi-family housing is 2,262.[44] If we take into consideration that in coming years the most needed housing types will be multiple dwellings, it can well be maintained that the exclusion of multi-family housing is the most troublesome feature of the various exclusionary devices.[45] Therefore, a decision of Pennsylvania's highest court requiring every municipality in that Commonwealth to have at least one acre where multiple dwellings are permitted, is important,[46] (even if developers do not automatically start building apartments) since municipalities in Pennsylvania now have the obligation to make some provision for all levels of the population. This is a good start towards dealing with a problem that prevails throughout the nation.[47]

If more multi-family housing is to become a reality, it is incumbent upon us to inquire into the relative appeal and effects of various residential environments. Is it likely that concentrated environments will satisfy the demands of an increasing proportion of the housing market? Investigators of the University of Michigan's Survey Research Center undertook an assessment of people's overall responses to selected, planned

41. City of Jackson v. McPherson, 162 Miss. 164, 138 So. 604 (1932); Wolfsohn v. Burden, 241 N.Y. 288, 297-98, 150 N.E. 120, 122 (1925).

42. Fox Meadow Estates, Inc. v. Culley, 233 App. Div. 250, 252 N.Y.S. 178 (2d Dep't 1931), aff'd per curiam, 261 N.Y. 506, 185 N.E. 714 (1933); Ralph Peck Holding Corp. v. Burns, 16 Misc. 2d 256, 181 N.Y.S.2d 737 (Sup. Ct. 1958).

43. See, e.g., Speroni v. Board of Appeals, 368 Ill. 568, 572, 15 N.E.2d 302, 304 (1938), where zoning ordinances upheld by the court permitted construction of apartment buildings in commercial or industrial districts.

44. N. Williams, Jr. and T. Norman, Exclusionary Land Use Controls: The Case of North-Eastern New Jersey, 22 Syracuse L. Rev. 475, 486-87 (1971).

45. Id. at 485-88.

46. Appeal of Girsh, 437 Pa. 237, 263 A.2d 395 (1970).

47. J.P. Fried, Housing Crisis U.S.A. 48 (1971).

residential environments and to specific features of these environments.[48] A total of 1,253 interviews were taken from people in communities dispersed throughout the nation with densities ranging from 2.7 to 14.1 dwelling units per acre. About two-thirds of the respondents with children under twelve rated outdoor play places near their residences as "good" or "excellent"[49] at every density level. As might have been expected, situations existed in which some people preferred higher and others preferred lower density arrangements. The data also corroborates certain other assumptions: (1.) that notwithstanding different densities, neighborhood satisfaction is related to good design; (2.) that the general level of maintenance is important; and (3.) that provision of adequate outdoor space is significant.[50]

A Harvard Graduate School of Design study indicates that "our society can tolerate and, indeed, needs numbers of high-density situations, and we are singularly deficient in knowledge about that end of the scale."[51] The need to examine the alternatives and consequences of different types of density was urged, for example, to ascertain the results of high density on social integration. As the report states, communities of 15,000 housing units for the aged were considered sociological horrors not too long ago. However, such communities have distinct advantages. A report by the University of Pennsylvania's Fels Center of Government[52] concluded that "[h]igh-rise housing, designed specifically for the elderly, and low-rise retirement villages with a wide range of facilities and services have both been judged to be successful."[53]

Future Directions

It is doubtful whether the waste resulting from rigid and non-realistic density practices can continue much longer. Within the last twenty years urban land values have increased by more than 400 per cent. For example, a single-family lot which cost one thousand dollars in 1950 cost more than five thousand dollars in 1970, and while the cost of living since 1965 increased by 25 per cent, the selling price of a single-family

48. J.B. Lansing, R.W. Marans, R.B. Zehner, 3 Planned Residential Environments 106-34 (1970).

49. Id. at 109.

50. Id. at 109, 121, 134.

51. Harvard Graduate School of Design, 12th Urban Design Conference, New Communities: One Alternative 123 (1968).

52. Id. at 123-24.

53. The Fels Center of Gov't, U. Pa., Standards for Suburban Housing Mix 129 (1971).

dwelling increased by 50 per cent.[54] Since the cost of single-family dwellings is driving moderate income families (*i.e.* $12,000 a year) to multi-family housing, the need for apartment sites will intensify.[55] Clearly the increase in urban land values is far greater than the increase in the cost of living in general. It also substantially exceeds the increase in building costs. Findings in President Nixon's Third Annual Housing report further substantiate the point:

> The one major element in housing costs that Federal policy has not addressed effectively to date is the cost of land. The price per square foot of land, used as sites for new homes purchased with FHA insured mortgages has increased at a rate averaging nearly 12 percent per year during the last 5 years. More attention must be paid to developing effective ways of slowing this rapid increase in land costs, both through Federal measures and efforts by State and local governments.[56]

In addition to cost considerations, more attention in the future must be given to the untoward effects of irrational density requirements on environmental issues. Consider only one manifestation—housing mix and sewerage. Of course, it is physically possible to provide sewage systems at any density. However, there is a density limit below which the cost becomes prohibitive. On-site sewage facilities, according to the U.S. Public Health Service, may result in substantial health dangers and therefore are not acceptable for developing suburban areas.[57] One investigator who examined the economics of sewage disposal found the following:

COST OF SEWAGE COLLECTION AND TREATMENT[58]
(1957-59 dollars)

Persons per Acre	Annual Cost per Capita	Change from Next Higher Density
512	$ 3.03	$
256	3.49	.46
128	4.09	.60
64	5.24	1.15
16	11.53	6.29
4	23.03	11.50
1	65.66	42.63

Note: Transmission costs are based on 5-mile distance from the treatment plant.

54. B. Weissbourd, Satellite Communities, 5 The Center Magazine 16 (Jan. 1972).

55. House and Home 67 (Sept. 1971).

56. Message from the President of the United States, Third Annual Report on Nat'l Housing Goals 19 (1971).

57. Public Health Service, HEW, Environmental Health Planning Guide 45 (1967).

58. P. Downing, The Economics of Urban Sewage Disposal 102 (1969).

As is apparent from the table, per capita plant costs are extremely high when small populations are to be served. Conversely, as the density of developments increases within a particular area, the sewage volume increases and plant construction and operation rates decrease. To translate this into density terms, public sewerage is clearly justified for a half-acre lot, questionable for a one acre lot, and clearly unjustified for a two acre or larger lot development.[59] Therefore, while low density zoning has generally been politically favored in suburban areas, the high cost of sewer installations because of high special assessments and sewer rents imposed on large lot owners may well create a new attitude in the future.

A final factor to be considered is educational services for the community. We can assume that the neighborhood school is generally favored among residents with school-age children, while out-of-neighborhood school busing is not. The number of students who can walk to school, however, is determined by the housing density, as is the cost and time of busing students outside an acceptable walking range. Planning for communities of the future must take this and other density factors into account.

Densities for New Communities

Comparative data of great importance concerning this interesting issue has been gathered and analyzed by HUD's Office of International Affairs. For example, a HUD report states that:

> Japan's new communities have relatively high densities, 13 to 18 living units per gross acre, and prospectively much higher. In the U.S., densities in the new communities are very much lower, averaging about 2.5 living units per gross acre. U.S. practice probably should be modified substantially by increasing densities in new communities.[60]

HUD researchers examined sixty large developments and new communities under construction in the United States from 1947 through 1969. They also evaluated such seasoned benchmark communities as Radburn (1929) and Forest Hills Gardens (1913). From this study they concluded that the American experience and a comparative analysis of Japanese development indicates that higher densities were warranted for new United States communities. Although the report noted that United States new community densities average about 2.5 living units per gross acre (lu/ga) and frequently go up to 5 lu/

59. Environmental Health Planning Guide, supra note 57, at 45.

60. Office of Int'l Affairs, U.S. Dep't of Housing and Urban Dev., HUD Int'l Brief 19 (June 1971) [hereinafter cited as HUD Int'l Brief].

ga, it cited with approval Forest Hills Gardens' 8.2 lu/ga.[61] This writer has found that greater economy of construction and operation are feasible at densities such as Radburn's (5.1 lu/ga). At such a density a new community could include single family homes, apartments and a considerable amount of open space.[62] Dr. Marion Clawson, citing a study of the economics of open space preservation in the San Francisco Bay area, indicated that closely spaced settlements resulted in both greater economies and more suitable open space than low residential density settlements.[63]

The great architect Le Corbusier carried the blending of intense housing development and open space emphasis to the extreme. His proposed ideal vertical city was to house 1,200 inhabitants to the acre. Since an extremely high building was to be used, 95 per cent of the ground would be available for open space, with only 5 per cent of the ground used by the skyscraper. Jane Jacobs quotes Le Corbusier as maintaining that "the whole city is a Park."[64] Unrealistic as this may be, HUD's plans for new communities indicate that these communities will have higher densities.[65]

The "Ideal" Density

A tabulation of "ideal" densities was assembled in a work supported by the Ford Foundation dealing systematically with various proposals for ideal or utopian communities.[66] The table reproduced in part below makes it clear that there is little or no agreement as to what constitutes an ideal density.

Date	Author, Title, Sub-area	Density per Gross Residential Acre	Optimum Population†
1923	A. Comey		
	Regional Planning Theory		
	"Sixth Class Size City"	±4 d.u.*	10,000-30,000
1924	Le Corbusier		
	Urbanisme		3,000,000
	City	125 people	600,000
	Garden Cities	n.a.‡	2,400,000

61. Id. at 23-24.
62. See note 18 supra.
63. M. Clawson, Suburban Land Conversion in the United States 157 (1971).
64. J. Jacobs, The Death and Life of Great American Cities 21 (1961).
65. HUD Int'l Brief, supra note 60 at 24.
66. T.A. Reiner, The Place of the Ideal Community in Urban Planning 144-45 (1963).

Date	Author, Title, Sub-area	Density per Gross Residential Acre	Optimum Population†
1945	Le Corbusier-ASCORAL		
	Les Trois Establissements Humains		
	Linear Town		10,000-20,000
	High Density	±40 d.u.	
	Low Density	±10 d.u.	
1923	E. Gloeden		
	Inflation der Gross Stadte		100,000
	Inner ring	50 d.u.	±80,000
	Outer ring	10 d.u.	±20,000
1947	P. Goodman and P. Goodman		
	Communitas		
	City of Efficient Consumption	100 d.u.	6,000,000-8,000,000
	New Commune		300,000
	Urban node	±75 d.u.	100,000
	Urban belt	¼ d.u.	100,000
	Semirural belt	¼ d.u.	100,000
	Production Center	n.a.	n.a.
1945	W. Gropius and M. Wagner		
	A Program for City Reconstruction		
	Small unit	10 d.u.	5,000
	Large unit	4 d.u.	5,000
1944	H. Herrey, *et al.*		
	Organic Theory		
	Residential Unit	3-12 d.u.	500-2,000 families
1898	E. Howard		
	Garden Cities	8-10 d.u.	32,000
1946	L. Justement		
	New Cities for Old		1,000,000 +
	Inner ring	±35 d.u.	
	Middle ring	10 d.u.	
	Outer ring	2-3 d.u.	
1947	A. Klein		
	Man and Town	25 d.u.	50,000-100,000
1934	R. Neutra		
	Rush City Reformed	100, 15, 6, or	220,000 adults
	(4 types of residential areas)	3 d.u.	
1944	J. L. Sert		
	Human Scale in City Planning		
	Residential Units	3-5 d.u.	5,000-10,000

Date	Author, Title, Sub-area	Density per Gross Residential Acre	Population† Optimum
1945	L. Wolfe		
	The Reilly Plan		
	Reilly Unit	10 d.u.	30-60 d.u.
1932	F. L. Wright		
	Broadacre City	½-1 d.u.	n.a.

† Population is given in number of inhabitants, unless otherwise specified.
* Density is given in number of dwelling units per acre (d.u.).
‡ n.a.: Information not available.
± Approximately.

Considering the density per gross residential acre proposed by Frank Lloyd Wright for his ideal, Broadacre City (½-1 dwelling unit), Thomas A. Reiner cogently comments:

> The United States built up by Broadacre City standards would have some 1 million miles of superhighways. This proposed highway system implies the existence of a society which is perhaps more wealthy than that envisaged by Wright, and one that is certainly more organized and group conscious than that pictured in Broadacre City. One further point: the type of highway envisaged would be warranted only if there were in the vicinity of perhaps 50,000 vehicular users daily, [an amount clearly] inconsistent with the proposed level of density.
>
> The cavalier disregard of the advantages of agglomeration also must be questioned. One suspects that, in actuality, there would arise more and stronger foci than shown. In brief, the scheme looks more like a slice of Mid-western exurbia than a prototype quarter section designed to cover a rebuilt United States.[67]

Of all these "ideal" densities, which is the "real" ideal? To provide one panacea-type answer is difficult if not impossible because of a number of realities. Different values are reflected in the alternatives presented. For example, there are planners and many others who believe that low-density housing is important in that it helps to achieve a fuller individual family life. The nationality and background of the planners of the ideal communities play a role in the determinations of an ideal density. Planners from Europe, for example, tend to advocate higher densities than those in the United States. Because needs, desires, environmental and other factors tend to vary, it should be obvious that density determinations have to be made accordingly. Even a large single-family residential lot of two acres may be damaging to the environment. For instance, an Arizona sales company bought a large tract in the Adirondack Park of New York State with the intention of subdividing it into lots of one-and-one-half and two acres for resort housing for 30,000 people. In order to

67. Id. at 74.

protect a primeval area of forest and wetland this development may have to be curtailed.[68]

Without in any way de-emphasizing the enormous and important need for apartment sites in suburbia,[69] a reasonable assumption is that in American households with school-age children the preference generally is for a single family home in a suburban area. Facing this assumption forthrightly, it appears that Ebenezer Howard's formulation for garden cities in England might provide us with a starting point for future single family residential development densities in suburbia. Although his suggested eight to ten dwelling units to the gross residential acre probably stands little chance of being adopted by many suburban communities in the near future, several points should be remembered. First, the widely respected work of the American Public Health Association's Committee on the Hygiene of Housing dealing with standards for healthful housing concludes that five units per acre is the desired net dwelling density standard for one family detached residences.[70] The maximum standard set was seven. A second important fact that should be recalled is that HUD has recently cited with approval planned developments of five, and even eight living units to the gross acre.[71] Also holding up well to the test of time is Ebenezer Howard's limitation of density that has safeguarded light, provided gardens and recreation space. It has not, however, led to diffusion and urban sprawl. The Garden City as conceived by Howard is a comparatively compact grouping, rather than the loose sprawl of individual houses that plague much of American suburbia.[72]

Another view of Ebenezer Howard's work can be found in Jane Jacobs' important and provocative book.[73] To her, six dwellings or fewer to the net acre are very low densities, however, she finds that these "very low densities . . . can make out well in suburbs."[74] With good design and site planning Mrs. Jacobs concludes that suburban densities can go to ten dwellings to the acre.[75]

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68. N.Y. Times, Mar. 31, 1972, at 28, col. 3-4.

69. S. Sussna, Apartment Zoning Trends, 36 Ky. B.J. No. 4, at 42 (Oct. 1972).

70. Committee on the Hygiene of Housing, American Public Health Association, Planning the Neighborhood 39 (1960).

71. HUD Int'l Brief, supra note 60, at 19, 23, 24.

72. E. Howard, Garden Cities of Tomorrow 24, 31-34, 54, 67 (1965).

73. The Death and Life of Great American Cities, supra note 64, at 17. See also id. at 25, 91, 116, 289, 342, 435.

74. Id. at 209.

75. Id.

Efficient Design

The target, therefore, is to regulate density by prescribing the allowed number of dwellings and floor space per acre on the basis of design controls to ensure compliance with a preconceived plan for each particular neighborhood development or new town. Privacy and amenities not found in many large-lot subdivisions, open land, sensible access and service, safety from automobile traffic, economy of design, needed community cohesiveness and other important objectives can be achieved with smaller lot sizes. Two devices to achieve the aforementioned goals of density control are the Planned Unit Development (P.U.D.) concept and the cluster layout.[76] In the past decade, Clarence S. Stein, the great architect-planner, has illustrated, from his studies of the European and American past, how intelligent design could yield densities that would achieve safety, healthful conditions and a pleasant environment.[77] His plan for Baldwin Hills and Beverly Hills in California's Los Angeles metropolitan area provides for 15 per cent building and garage coverage of the 80 acre site. Baldwin Hills Village plan with its spaciousness and green openness has a density of 7.8 dwelling units to the acre.[78]

We need not be totally without guidance on the important issue of determining residential densities. There are careful, responsible and intelligent paths to follow that avoid the harmful consequences of overcrowding and high densities. Once our focus is on objective issues such as the physical characteristics of the site and its economical use, relating objective standards and data to traffic congestion, noise, undue pressure on services, light, air, open space, and effect on adjoining properties, we shall reduce the enormous current waste of land. We will then provide sites for desperately needed housing while minimizing the impairment to the environment.

Even at this time we find a case holding that a Planned Area Development (P.A.D.) ordinance, otherwise valid, will not be overturned where the residential density permitted was higher under P.A.D. than authorized under the general zoning statute.[79] Another court has held

76. See N.Y. Times, Jan. 3, 1960, § 8, at 1, col. 3; id., Feb. 14, 1960, § 8, at 1, col. 1-2; S. Sussna, Why Zone for Large Lots, 2 Current Municipal Problems, No. 4, at 16 (May 1961); House and Home 117 (Sept. 1959); Urban Land Institute, New Approaches to Residential Land Dev.: A Study of Concepts and Innovations 23, 28-29 (1961); S. Sussna, New Dev. In Zoning Law, Proceedings of the Eighth Institute on Planning and Zoning, at 14-18 (Dallas, Texas 1969).

77. C.S. Stein, Toward New Towns For America (1966).

78. Id. at 190-99.

79. Peobody v. City of Phoenix, 14 Az. A. 576, 485 P.2d 565 (1971).

that an increase in population density and lowering of property values resulting from the construction of a low-income project does not constitute irreparable injury to suburban and unincorporated area residents who have no constitutional right to "have things remain as they are."[80]

There are ways of having more realistic, higher densities that sensibly take into account neighboring land uses. New York builder Gerald D. Lloyd has provided a formula that deals with typical land uses and relates them to the density or intensity of use of predominant neighboring uses.[81] In an area surrounded with stable two-acre lots, garden apartment density might be six units to the acre. In an urban core area with minimal parking requirements, thirty units of garden apartments might be allowed. Mr. Lloyd's formula takes into account the value of typical existing dwelling units and the value of land per dwelling unit which as well as the amount to be paid for new construction. The formula also maintains the existing average density of dwelling units per acre as well as provides for certain bonuses dealing with expenses of assembly.

Another remedial density device that the concerned developer, governmental official or planner might examine is the attempt by New York City's Department of Planning to cope with undersized lots in areas of the city with comparatively low densities.[82] Current zoning in communities throughout the nation makes it difficult and frequently uneconomical to use undersized lots. Consequently the techniques developed by the New York City Planning Department to increase allowable density can serve as an important starting point for possible application to other communities, especially central cities. The Planning Department points out that an increase of allowable density will permit development of the undersized lots without increasing the zoned capacity of the neighborhood. This is because undersized lots are not the product of the zoning scheme but simply a consequence of haphazard development.[83]

Another method of encouraging developers to provide low and moderate income housing as part of their development is to use "density bonuses." Basically a density bonus is a grant to a developer which allows him to construct more housing units per acre than normally allowed if the units meet certain standards in the P.U.D. ordinance. In Delaware's

80. Fletcher v. Romney, 323 F. Supp. 189, 195 (S.D.N.Y. 1971).

81. G.D. Lloyd, Development Regulation, Why We Need It, Regulatory Devices 50-52 (1969) (Papers presented at the Regulatory Devices short course held at the 1969 ASPO National Planning Conference).

82. N.Y.C. Dep't of Planning, Infill Zoning 3-5, 9, 39 (1972).

83. Id. at 9.

New Castle County up to nine units per acre are allowed on land currently zoned for half-acre lots if quality design and subsidized housing provisions are followed. P.U.D. ordinances can be used as incentives in suburban communities to vary densities while maintaining an overall density that provides adequate open space and facilities.

Whether dealing with central city or suburban densities, there is a need to match existing and planned facilities with density considerations more carefully than in the past. Concentrating on densities based on objective, rational and regularly evaluated plans permits the planner to provide parks in optimal numbers and sizes. This can avoid both crowding and sprawl.

University of Wisconsin Professor Mason Gaffney urges the retention of economists to measure the benefits and costs of open space:

> It is high time we introduce rational management and optimization into a topic now too freighted with hoarding, alarmism, sentimentality, camouflaged race prejudice, opportunistic tax-dodging, and uncritical nature worship.[84]

Density standards are presently so irrational, unrealistic and unfair that they have become unrelated to the health and welfare of millions of Americans. Too many zoning standards are seemingly pulled out of thin air. There is a desperate need to regularly follow the best examples of residential and other developments so that the continued frustration of housing, open space, facility and other needs are substantially diminished.

How is the law to intervene in redressing the evils wrought by improper densities? There is a need to consider mechanisms under which a municipality compensates a landowner for a loss in value which zoning imposes. A presidential housing report indicates that the land cost under high-rise apartment density zoning is 11 times the cost per acre of a single-family site.[85] Since many single-family densities should, on objective factors, be rezoned for high-rise apartments, it is time to think about more effective legal remedies than are now available.

There is hope for widening judicial inquiry in zoning cases dealing with density by the intervention of third-party litigants. These are the persons deprived of housing in suburbia due to excessive single-family zoning requirements or by the absence of conveniently located multi-family housing sites with reasonable densities. There are clear signs that harmful practices in zoning policy will increasingly be put to the test in

84. Gaffney, Land Planning and the Property Tax, Housing and Economics: The American Dilemma 195-96 (M.A. Stegman ed. 1971).

85. Message from the President of the United States, Third Annual Report on Nat'l Housing Goals 103 (1971).

litigation. Unfairness, based on land use allocations with a racial component, is a proper issue to be examined in courts, which are affording standing to third-party litigants (e.g., blacks and Mexican-Americans not owning the land in question but adversely affected).[86] As the United States Supreme Court has pointed out: "[i]t is of no consolation to an individual denied the equal protection of the laws that it was done in good faith."[87] The courts have also recognized that classifications which discriminate on economic grounds result in effective racial exclusion.[88]

Perhaps Judge J. Skelly Wright best sums up the thoughts herein expressed in stating "[w]e now firmly recognize that the arbitrary quality of thoughtlessness can be as disastrous and unfair to private rights and the public interest as the perversity of a willful scheme."[89] More sensible applications of the density concept are essential to achieve practical and desirable housing for future generations.

86. Ranjel v. City of Lansing, 293 F. Supp. 301 (W.D. Mich.), rev'd per curiam, 417 F.2d 321 (6th Cir. 1969), cert. denied, 397 U.S. 980; reh'g denied 397 U.S. 1059 (1970).

87. Burton v. Wilmington Parking Auth., 365 U.S. 715, 725 (1961).

88. Johnson v. Pike Corp., 332 F. Supp. 490 (C.D. Cal. 1971); see also S. Alameda Spanish Speaking Org. (SASSO) v. Union City, 424 F.2d 291 (9th Cir. 1970). Molino v. Mayor of Glassboro, 116 N.J. Super. 195, 204, 281 A.2d 401, 406 (Law Div. 1971).

89. Hobson v. Hansen, 269 F. Supp. 401, 497 (D.D.C. 1967).