

NORTH CAROLINA URBAN FORESTRY PLAN (2004-2008)

In simple terms, urban forestry can be defined as the management of all wooded vegetation within urban areas (Phillips, *Urban Trees*, 1993). But this definition does not even begin to address the complexity of the actual practice of urban forestry. This complexity comes from the extent to which humans impact their environment (Miller, *Urban Forestry*, 1996):

- More people living in cities requires the expansion of the cities into the surrounding rural woodlands.
- Social value shifts to reflect urban living exert a strong influence on the management of rural land.
- Urbanization continues to have a negative impact on vegetation within cities as well as in the urban/rural interface and rural forests.

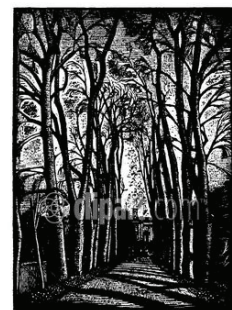


That said, urban forestry, as defined by the Society of American Foresters, is a specialized branch of forestry that aims to cultivate and manage trees for their present and potential contributions to the physiological, sociological and economic well-being of urban society. In its broadest sense, urban forestry embraces a multifaceted managerial system that includes municipal watersheds, wildlife habitats, outdoor recreation opportunities, landscape design, recycling of municipal wastes, tree care, and the future production of wood fiber as a raw material.

Urban forestry, then, addresses woodlands, groups of trees, individual trees, and the urban fringe, wherever people live. And these areas provide benefits as well as challenges.

I. FORESTRY IN NORTH CAROLINA

North Carolina has a long history of management and stewardship of the state's forest resources. More recently, emphasis has extended to the urban forest resource in order to maintain and improve the quality of life in our communities. There is a growing realization that the urban forest must be managed with stewardship in mind, as population and development continue to increase. The benefits of a managed urban forest contribute to the economic and environmental well-being of all North Carolina communities.



The NC Division of Forest Resources' Urban and Community Forestry Program has made significant progress since it was established in the early 1970s. Prior to 1991, the program's funding was tenuous. Then, in response to the 1990 Farm Bill, state urban forestry programs were funded through the USDA Forest Service. In addition, a budget for Urban and Community Forestry Grants was established and Urban Forest Councils were established in all 50 states.

This five-year plan for the NC Division of Forest Resources' Urban and Community Forestry Program builds on the accomplishments since 1991. The plan encompasses our progress and present status followed by a plan of action for the next five years. Assistance was provided from the USDA Forest Service, the NC Urban Forest Council and the NC Cooperative Extension Service.

II. WHERE ARE WE NOW?

Demographics

According to the 2000 census, North Carolina's population was 8 million people and it was the eleventh most populous state in the nation. Based on 2003 estimates, the state has grown about 4.5% since the 2000 census. The source of the growth is shared by migration and increases in the resident population.



In addition, there are changes in the population's composition. The age of the population is increasing which will have a significant impact in the needs and expectations of citizens. Experts anticipate that this group will have greater disposable income, be more politically active and be looking for volunteer activities within their communities. At the opposite end of the age spectrum, people in the echo boom generation (children of the baby boomers) are expected to increase the population under 10 years old and increase the demand for programs for these younger citizens.

An increase of high tech industries and the growth of urban centers has created a more affluent and cosmopolitan population. North Carolina has become a predominately urban state (51% of the population resides within a municipality based on 2002 estimates). However, much of the state is still relatively rural in nature, with only six municipalities with populations greater than 100,000 and only 25 of the 100 counties having at least one municipality with a population greater than 20,000. Of the 543 municipalities in the 2000 census, 232 had populations less than 1,000 with another 228 having 1,000-7,500 people. This leaves only 83 municipalities with a population greater than 7,500.

Overview of Urban Forests/ Forestry in North Carolina

Throughout North Carolina forests and trees face many challenges. Studies show that in urban environments only one tree is planted for every four removed. Due to improper planting and care, trees in urbanized areas live an average of seven years, never reaching maturity. Compacted or paved ground creates high summer temperatures and prevents water from filtering down to a tree's root zone. Thousands of acres of forested land are cleared for development, leaving fragments of forest scattered throughout the landscape. There is little concern for the replacement of lost canopy cover due to development activities.



The magnitude of the increasing significance of urban forestry in North Carolina can be seen in the following table which shows a 1.1 million acre decrease in

timberland between 1990 to 2002. This reduction in acreage is overwhelming urban, developmental and *permanent*.

Timberland Change 1990-2002	Acres
Area of timberland 1992	18,710,381
Additions from non-forest	618,991
Diversions to:	
Noncommercial forest	20,789
Agriculture	567,654
Water	18,172
Urban (and other)	1,038,340
Area of timberland in 2002	17,684,417
Net change in timberland	-1,025,964

Given that urbanization has such a profound impact upon the air, forests and rivers of the state, the practice of urban forestry can make a strong positive contribution to the mitigation of these effects. An Urban Forestry technical assistance program can link cities and the forested urban fringe. Such a program is also a valuable means to educate the public of the need for specialized forestry practices in the expanding zone of fragmented forestland.

Local/State/National Programs:

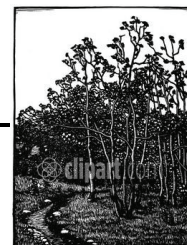
Currently, about 65 communities in North Carolina have a tree ordinance. Thirty-one municipalities employ a full-time urban forester, arborist, horticulturist or landscape supervisor. The NC Division of Forest Resources (NCDFR) employs two full-time urban foresters and involves a number of field personnel to assist cities and towns in urban forestry matters. The Cooperative Extension Service provides valuable educational assistance to municipalities across the state through their county agents. The statewide Master Gardener Program has a new training module on trees and tree care.



Tree City USA (TCUSA) communities are committed to the management of the urban forest. TCUSA communities have a tree ordinance, spend a minimum of \$2.00 per capita on trees and many have tree boards. This program, sponsored by the National Arbor Day Foundation and administered by the Division of Forest Resources, has 51 communities presently registered as Tree Cities.

III. WHERE ARE WE GOING?/HOW WILL WE GET THERE?

Urban Forestry Program of the



Division of Forest Resources

The Mission of the Department of Environment and Natural Resources is to provide leadership education and advocacy for the responsible stewardship of North Carolina's environment and natural resources.

The Mission of the Division of Forest Resources is to develop, protect and manage the multiple resources of North Carolina's forests through professional stewardship, enhancing the quality of life for our citizens while ensuring the continuity of these vital resources.

The Objective of the Urban Forestry Program is to provide technical assistance and services to individuals, groups, communities, governmental agencies and organizations with respect to the protection, improvement, management, establishment and utilization of trees and shrubs in urban areas, communities, and open spaces, for the improvement of the beauty and livability of the urban environment.





IV. PROGRAM GOALS

The goals developed to reach the mission statement of the Urban and Community Forestry Program:

Goal 1: Public Awareness, Education and Communication

Objective: Increase the knowledge level of North Carolinians regarding the importance of trees to the social, economic and environmental well-being of the citizens and the state.

Actions:

- A. Provide information, training and other educational opportunities for arborists, tree boards, municipal tree managers, volunteers and other urban forestry partners through mailings, programs, public events, media campaigns and personal contact.
- B. Create relevant informational materials for distribution to the public through field staff, North Carolina Urban Forest Council (NCUFC) workshops, Cooperative Extension Service, and other cooperators.
- C. Increase public awareness of professionalism and the importance of certified arborists.
- D. Support the initiative of NC State University College of Natural Resources in creating an urban forestry curriculum and distance education programs.
- E. Promote the NC Champion Tree Program with a new web site.
- F. Create a calendar of Champion Trees for distribution.
- G. Support conservation education projects and programs which include a specific urban forestry message.
- H. Maintain a statewide mailing list/database that includes U&CF partners and resources.

Objective: Support NCDFR field staff in working with communities, interest groups, local governments.

Actions:

- A. Educate field technicians and foresters regarding urban forestry issues with in-house and external training opportunities.
- B. Equip field personnel with proper resources and support materials, including internal web site, references, urban forester consultant lists, and similar material.

- C. Keep field personnel informed regarding urban forestry programs, grant applications, educational opportunities.
- D. Provide state and county fairs with urban forestry materials.

Objective: Increase awareness of urban forestry within “green industry” (e.g., lawn care, landscaping, etc.).

Actions:

- A. Promote and support compatible goals and objectives of the North Carolina Urban Forest Council including marketing, education and training offerings.
- B. Support urban forestry goals and objectives of the North Carolina Cooperative Extension Service for their programs in Entomology, Plant Pathology, Soil Science, Horticulture and Forestry.
- C. Encourage and support outreach activities by non-profit groups, including the NCUFC, to other green industry organizations, such as booths, workshop partnerships, etc.

Goal 2: Sustained and independent comprehensive urban forestry programs

Objective: Increase number of communities with urban management programs.

Actions:

- A. Encourage and promote the Tree City USA program, new certifications, recertification and Tree Growth Awards.
- B. Assist communities establish local tree boards.
- C. Assist cities and towns with the adoption of urban tree management and/or landscape ordinances.
- D. Provide access to appropriate tree inventory programs and consultants for tree inventories.
- E. Promote the “Hire an Urban Forester” to communities, encouraging partnerships between communities.
- F. Promote assessments of tree cover and canopy loss in urbanized areas.

Objective: Increase participation of interest groups in urban forestry activities in their locales.

Actions:

- A. Promote Arbor Day poster contests, celebrations and tree plantings.
- B. Encourage local interest group involvement with NeighborWoods and other local initiatives.
- C. Promote the inclusion of volunteer participation (Scouts, schools, clubs) in grant applications.
- D. Promote the identification and inclusion of underserved and at-risk groups and communities in grant projects.
- E. Increase availability of workshops and other educational opportunities to all areas of the state, such as the I-40 workshop series and the Carolina Canopy workshops by the

NCUFC, and multiple presentations of workshops across the state.

Objective: Increase level of tree care and maintenance for sustainability.

Actions:

- A. Encourage proper planting and follow-up tree care techniques through educational opportunities by sub-grantees of the Urban and Community Forestry Program as well as NC Cooperative Extension Service and NC Urban Forest Council.
- B. Support tree-planting initiatives and projects which include educational elements for proper tree planting and care.
- C. Promote use of appropriate species, particularly native trees and shrubs where appropriate.
- D. Promote hazard tree assessment and mitigation through materials, workshops in urban forestry ordinances and management plans.
- E. Provide assistance to individuals, organizations, homeowner associations and communities, which may include, where appropriate, management plans, tree selection, planning, maintenance, hazard tree identification, removal recommendations and insect and disease problems.
- F. Promote the creation or improvement of tree ordinances using seven main components: tree protection, tree planting, tree inventory, tree maintenance, hazard tree mitigation, publications/promotion and education.

Goal 3: Integration of goals of urban forestry, silviculture, resource planning, water quality, fire protection, and insect and disease.

Objective: Increase understanding and importance of planning for trees.

Actions:

- A. Promote and provide access to workshops on zoning and design, building with trees and tree protection for local government, planners, developers, and other appropriate entities.
- B. Promote the inclusion of green and natural spaces in projects and planning – naturalizing, linkages, corridors, reducing maintained areas.
- C. Provide and create additional materials and support information for people in areas of North Carolina under development pressure.

Objective: Increase understanding of silviculture in the urban interface.

Actions:

- A. Create a web site with local ordinance information relating to trees, for landowners, developers and other interested parties.

- B. Encourage the management of small wooded properties in the urban interface, through informational materials and workshops.
- C. Promote “suburban” silviculture techniques that are acceptable in and around populated areas.
- D. Promote wildland/urban interface standards for fire protection and prevention in planning for developments in wooded areas, through programs such as FireWise.
- E. Provide assistance as requested for planning in the urban/rural interface.
- F. Promote urban forest management for the benefits that can be achieved for urban wildlife, soil protection, and water quality improvements.

RESOURCE INFORMATION

ORGANIZATIONS

American Nursery and Landscape Association
1000 Vermont Avenue NW, Suite 300
Washington, DC 20005-4914
202.789.2900
www.anla.org

American Farmland Trust
1200 18th Street NW, Suite 800
Washington, DC 20036
202-331-7300
www.farmland.org

American Forests
PO Box 2000
1516 P Street NW
Washington, DC 20013
202.955.4500
www.americanforests.org

American Horticultural Society
7931 East Boulevard
Alexandria, VA 22308
800.777.7931
www.ahs.org

American Planning Association
122 South Michigan Avenue, Suite 1600
Chicago, IL 60603
312.431.9100
www.planning.org/index.html

American Society of Consulting Arborists
15245 Shady Grove Road, Suite 130
Rockville, MD 20850
301.947.0483
www.asca-consultants.org

American Society of Landscape Architects
636 Eye Street NW
Washington, DC 20001-3736
202.898.2444
www.asla.org

Army Environmental Policy Institute
430 Tenth Street NW, Suite 206
Atlanta, GA 30318-5768
404.786.2445
www.aepi.army.mil

Associated Landscape Contractors of America
150 Elder Street, Suite 270
Herndon, VA 20170
800.395.ALCA
www.alca.org

College of Natural Resources, NCSU
Department of Forestry
Box 8008
Raleigh, NC 27695-8008
919.515.2891
<http://natural-resources.ncsu.edu/for/>

Duke Power Company
PO Box 1090
Charlotte, NC 28201-1090
www.duke-energy.com

Entomological Society of America
9301 Annapolis Road
Lanham, MD 20706-3115
301.731.4535
www.entsoc.org

Extension Forestry
North Carolina State University
Box 8003
Raleigh, NC 27695-8003
919.515.5638
www.ces.ncsu.edu/nreos/forest

Garden Club of NC Inc.
505 Oberlin Road, #150
Raleigh, NC 27605
919.834.0686

Green Laws
Highlighting legal standards and technical requirements for site development planning, tree preservation and landscape ordinance legislation.
www.greenlaws.lsu.edu

International Society of Arboriculture
PO Box 3129
Champaign, IL 61826-3129
217.355.9411
www.isa-arbor.com

International Society of Arboriculture,
Southern Chapter
213 Apollo Drive
Mount Airy, NC 27030
336.789.4747
www.isasouthern.org

Land Trust Alliance
1319 F Street NW, Suite 501
Washington, DC 20004
202.638.4725
www.lta.org/org.html

National Alliance for Community Trees
4302 Baltimore Ave
Bladensburg, MD 20710-1031
301.699.8635
www.actrees.org

National Arbor Day Foundation
100 Arbor Avenue
Nebraska City, NE 68410
402.474.5655
www.arborday.org

National Arborist Association
Route 101, PO Box 1094
Amherst, NH 03031-1094
603.673.3311
www.natlarb.com

National Scenic Byways Resource
Center
130 Paley Way
Alpharetta, GA 30022
770.619.1822

National Tree Trust
1120 G Street NW, Suite 770
Washington, DC 20005
800.846.8733
www.nationaltreetrust.org

National Urban & Community Forestry
Advisory Council
USDA Forest Service
20628 Diane Drive
Sonoma, CA 95370
209.536.9201
www.treelink.org/nucfac/index.htm

National Wildlife Federation
11100 Wildlife Center Drive
Reston, VA 20190-5362
800.822.9919

www.nwf.org.
NC Department of Environment and
Natural Resources
512 N Salisbury Street
Raleigh, NC 27626
919.733.4984
www.enr.state.nc.us

NC Department of Transportation
1 S Wilmington Street
Raleigh, NC 27611
919.733.2520
www.ncdot.org

NC Division of Community Assistance
301 N Wilmington Street
Raleigh, NC 27801
919.733.4151
www.dca.commerce.state.nc.us

NC Division of Forest Resources
512 N Salisbury Street
Raleigh, NC 27699
919.733.2162
www.dfr.state.nc.us

NC Division of Parks and Recreation
512 N Salisbury Street
Raleigh, NC 27699
919.733.4181
www.ils.unc.edu/parkproject/ncparks.html

NC Electric Membership Corporation
3400 Sumner Boulevard
Raleigh, NC 27616
800.662.8835
www.ncemcs.com

NC Forestry Association.
1600 Glenwood Avenue, Suite 1
Raleigh, NC 27608
800.231.7723
www.ncforestry.org

NC Society of Consulting Foresters
3625 Westridge Circle
Rocky Mount, NC 27804
252.443.5667

NC Board of Registration for Foresters
PO Box 27393
Raleigh, NC 27611
919.772.5883
<http://members.aol.com/ncbrf/index.htm>

NC Urban Forest Council
PO Box 25852
Winston-Salem, NC 27114-5852
336.774.0215
www.ncufc.org

NC Wildlife Resources Commission
1726 Mail Service Center
Raleigh, NC 27699-1726
919.662.4370
www.wildlife.state.nc.us

Progress Energy Carolinas
PO Box 1551
Raleigh, NC 27602-1551
800.452.2777
www.progress-energy.com

Scenic NC
19 W Hargett Street
PO Box 628
Raleigh, NC 27602-0628
919.832.3687

Society of American Foresters
5400 Grosvenor Lane
Bethesda, MD 20814-2198
301.897.8720
www.safnet.org

Southern Center for Wildland-Urban
Interface Research and Information
408 W University Avenue, Suite 306
Gainesville, FL 32601
352.376.3213

www.interfacesouth.org
Society of Municipal Arborists
7000 Olive Boulevard
University City, MO 63130-2300
314.862.1711
www.urban-forestry.com

Tree Care Industry Organization
3 Perimeter Road, Unit 1
Manchester, NH 03103
800.733.2622
www.natlarb.com

Treelink
Includes an extensive links list,
research, news, forums, and urban
forestry educational materials.
www.treelink.org

USDA Forest Service, Southern Region
1720 Peachtree Road NW
Atlanta, GA 30367-9102
404.347.1647
www.urbanforestrysouth.org

USDA-Natural Resources Conservation
Service, NC Office
4405 Bland Road, Suite 205
Raleigh, NC 27609
919.873.2100
www.nc.nrcs.usda.gov

PUBLICATIONS

Abiotic Disorders of Landscape Plants: A Diagnostic Guide. 2003. Costello *et.al.*
University of California, Pub 3420.
<http://anrcatalog.ucdavis.edu>

An Illustrated Guide to Pruning, 2nd ed.
2002. Edward Gilman. Delmar Publishers,
Albany, NY

Arboriculture and the Law. 1992.
Merullo and Valentine. International Society
of Arboriculture (ISA), PO Box 3129,
Champaign, IL
www.isa-arbor.com

Arboriculture, Integrated Management of
Landscape Trees, Shrubs and Vines, 4th ed.
2003. Harris *et.al.* Prentice Hall. Englewood
Cliffs, NJ

Diseases of Trees and Shrubs. 1987. Sinclair,
Lyon & Johnson. Cornell University Press,
Ithaca, NY

Drought Resistant Trees. 1989.
University of Georgia Cooperative Extension
Service, Athens, GA

Forestry Handbook. 1984.
Society of American Foresters
5400 Grosvenor Lane, Bethesda, MD

Growing Greener Cities. 1992.
Moll & Young. Living Planet Press
508 Rose Avenue, Venile, CA

Insects That Feed on Trees and Shrubs, 2nd
ed. 1991. Johnson and Lyon. Cornell
University Press, Ithaca, NY

Manual of Woody Landscape Plants: Their
Identification, Ornamental Characteristics,
Culture, Propagation and uses, 5th ed. 1998.
Michael Dirr, Stipes Publishing Co.,
Champaign, IL

Modern Arboriculture. 1991.
100 Tree Myths. 1993.
Alex Shigo. Shigo and Trees Associates,
PO Box 769, Durham, NH
www.chesco.com/~treeman/treeinfo.html

Pirone's Tree Maintenance, 7th ed. 2000.
Hartman *et.al.* Oxford Press, New York, NY

Principles and Practice of Planting Trees
and Shrubs. 1997. Watson and Himelick.
ISA.

Protecting Trees from Construction
Damage: A Homeowner's Guide, 2nd ed.
1999. Gary Johnson. University of
Minnesota Extension Service.
[www.extension.umn.edu/
distribution/housingandclothing/DK6135.html](http://www.extension.umn.edu/distribution/housingandclothing/DK6135.html)

Shading Our Cities. 1989. Moll and
Ebenreck, eds. Island Press, Washington,
DC

Storms over the Urban Forest. 1994. Burban
and Andresen. USDA Forest Service

Recommended Trees for Urban Landscapes:
Large Trees for North Carolina; Plants for
Seashore; Plants for Wet Sites; Small Trees
for North Carolina; Trees for Difficult Sites;
Trees, Utility Lines. Horticulture
Information Leaflets. NC Cooperative
Extension Service.
[www.ces.ncsu.edu/depts/
hort/consumer/hortinfo.html](http://www.ces.ncsu.edu/depts/hort/consumer/hortinfo.html)

Street Tree Factsheets. 1993. Gerhold *et.al.*,
eds. Pennsylvania State University
Publications Office

Trees for Urban and Suburban Landscapes.
1997. Edward Gilman. Delmar Publishers,
Albany, NY

Urban Forestry: Planning and Managing
Urban Greenspaces, 2nd ed. 1996. Robert
Miller. Prentice Hall, Englewood Cliffs, NJ

Urban Soils: Applications and Practices.
1999. Philip Craul. John Wiley & Sons
Indianapolis, IN

Urban Soil in Landscape Design. 1992.
Philip Craul. John Wiley & Sons,
Indianapolis, IN

Weed Science Society of America Handbook
Weed Science Society of America,
309 W Clark Street, Chicago, IL

STANDARDS AND GUIDELINES

A Photographic Guide to the Evaluation of Hazard Trees in Urban Areas. 1991. International Society of Arboriculture (ISA), PO Box 3129, Champaign, IL
www.isa-arbor.com

American Standard for Nursery Stock. 1996. American Nursery and Landscape Association, 1000 Vermont Avenue NW, Suite 300, Washington, DC
www.anla.org

ANSI A300: Tree, Shrub, and Other Woody Plant Maintenance - Standard Practices; Best Management Practices
Pruning - Part 1-2001
Fertilization - Part 2-2004
Support Systems - Part 3-2000
Lightning Protection Systems - Part 4-2002
Management of trees and shrubs during site planning, site development, and construction - Part 5
Transplanting - Part 6
Integrated Vegetation Management - Part 7
ISA.

ANSI Z133.1-2001: American National Standard for Arboricultural Operations - Pruning, Repairing, Maintaining, and Removing Trees, and Cutting Brush-Safety Requirements.
ISA.

ISA Arborist Certification Study Guide, 3rd ed. 2001. ISA.

Guide for Plant Appraisal, 9th ed. 2000. ISA.

Guidelines for Developing and Evaluating Tree Ordinances. ISA.
www.isa-arbor.com/publications/ordinance.asp

Trees and Development: A Technical Guide to Preservation of Trees During land Development. 1998. Matheny and Clark. ISA

Trees and Overhead Electric Wires: Proper Pruning and Selection. 1994.
E.B. Himelick. ISA.

Appendix 1

1. Communities with tree ordinances:

Asheville*	Granite Quarry	Oriental*
Black Mountain*	Greensboro*	Raleigh*
Boone*	Greenville*	Red Springs*
Brevard*	Hamlet*	Rocky Mount*
Burlington*	Hendersonville*	Rowland
Carrboro*	Hickory	St. Pauls*
Cary*	Hillsborough	Salisbury*
Chadbourne*	Jacksonville*	Shelby
Chapel Hill	Kinston*	Southern Pines*
Charlotte*	Knightdale*	Southport*
Clinton*	Laurinburg*	Statesville*
Concord	Lenoir	St. Pauls*
Davidson	Lexington	Surf City*
Durham*	Long Beach*	Taylorsville*
Eden*	Louisburg	Valdese*
Edenton*	Lumberton*	Wake Forest*
Elon	Marion*	Weaverville*
Enfield*	Matthews*	Wendell*
Erwin*	Maxton*	Wilkesboro
Farmville*	Mocksville*	Wilson*
Fayetteville*	Monroe*	Winston-Salem*
Franklin	Mooresville	Yanceyville*
Franklinton*	Morganton	* indicates Tree City USA
Goldsboro*	New Bern*	certification.
Graham*	Oak Island*	

2. Communities with programs coordinated by an urban forester, arborist or landscape supervisor.

Apex	Gastonia	Salisbury
Asheville	Graham	Southern Pines
Boone	Greensboro	Statesville
Brevard	Greenville	Surf City
Carrboro	Hickory	Valdese
Cary	Jacksonville	Wendell
Chapel Hill	Laurinburg	Wilmington
Charlotte	Lumberton	Wilson
Durham	Mount Airy	Winston-Salem
Farmville	New Bern	
Fayetteville	Raleigh	

20 of the 33 municipalities with a population greater than 20,000 people are included in this list.

3. NC community populations, according to the 2000 census.

<u>Population</u>	<u>Number of Communities</u>
<1,000	234
1,000-2,500	118
2,500-5,000	82
5,000-7,500	23
7,500-10,000	21
10,000-15,000	14
15,000-25,000	25
25,000-50,000	8
50,000-100,000	9
100,000-250,000	4
250,000-500,000	1
>500,000	1

Acknowledgements

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