



SOUTHERN
GROUP OF STATE
FORESTERS

URBAN FORE\$TRY

ECONOMIC ANALYSIS IN THE SOUTHERN REGION, 2019

METHODOLOGY





PREPARED FOR

Virginia Department of Forestry

PREPARED BY

**Rajan Parajuli, Stephanie Chizmar,
and Austin Lamica**

North Carolina State University

Eric Wiseman and Stella Schons

Virginia Polytechnic Institute
and State University

Jason Gordon

University of Georgia

James Henderson

Mississippi State University

Thomas Ochuodho

University of Kentucky

Sayeed Mehmood

Ohio State University

Lara Johnson

Virginia Department of Forestry

Date of publication: January 2023

TABLE OF CONTENTS

LIST OF TABLES AND FIGURES	ii
I Project Synopsis	1
II Project Partners	2
III Project Goals and Objectives	3
IV Project Approach	4
V Scope of Urban and Community Forestry Activities	5
VI Survey	6
Private Businesses	7
Investor-owned Utility Working in Tree-line Maintenance	7
Public (County and Municipal Government)	7
Public State Agencies	7
Higher Education Institutions	7
Non-Profit Organizations	7
VII Employment in Urban and Community Forestry	8
VIII IMPLAN Methodology	11
IX U.S. Forest Service Nondiscrimination Statement	52
REFERENCES	12
APPENDICES	13
Appendix A: Webinar Meeting Minutes	13
Appendix B: Survey Instruments	17

... continued



LIST OF TABLES

T1 Scope of Urban and Community Forestry (U&CF) in the Southern Region	5
---	---

LIST OF FIGURES

F1 Map Depicting the 13 States Involved in the U&CF Economic Analysis	6
F2 Summary Statistics for an Online Survey Distributed to U&CF Businesses and Organizations in the Southern States from July to December 2021	7
F3 Average Employment Profile in the U&CF Private Sector in the Southern States in 2019	8
F4 U&CF Jobs in Local Government Public Agencies in the Southern States in 2019	9
F5 U&CF Jobs in Higher Education Institutions in the Southern States 2019	10
F6 U&CF Jobs in Non-profit Organizations (NPOs) in the Southern States in 2019	10

I. PROJECT SYNOPSIS

Urban and community forests are an integral component of cities and towns, as they not only provide critical ecosystem services to continuously increasing urban populations, but also have a substantial economic contribution to the regional economies of the United States. Economic contribution analysis communicates to policy makers and legislators the greater monetary benefits of the urban and community forestry (U&CF) sector in terms of its contribution to the gross domestic product, jobs, and labor income.

THE OVERARCHING GOALS OF THIS PROJECT

- 1 Reach consensus on the scope of the U&CF sector in the 13-state southern region of the United States among the different stakeholders of the project
- 2 Develop an economic contribution analysis specific to the U&CF sector using IMPLAN that may be easily communicated and replicated
- 3 Estimate the economic contribution of the U&CF sector in the study area
- 4 Communicate the project approach and findings to stakeholders and the public.

THE SPECIFIC OBJECTIVES OF THE PROJECT

- 1 Facilitate discussion and consensus on the scope of what constitutes the U&CF sector, the methodology for analysis, and the report template
- 2 Develop and distribute relevant survey questions in cooperation with the project team in order to capture the contributions specific to the U&CF sector
- 3 Document the methodology and rationale for the selected approach in a written report
- 4 Analyze the data collected
- 5 Produce reports documenting regional and state-level analysis results and summary spreadsheets
- 6 Disseminate the information to U&CF stakeholders and the public by and large through a webinar and an in-person presentation

To accomplish these objectives, the College of Natural Resources at North Carolina State University teamed up with Ohio State University, Virginia Polytechnic Institute and State University (Virginia Tech), University of Georgia, University of Kentucky, and Mississippi State University.

The structure of this report is as follows: to describe the methods used to conduct an economic contribution analysis of urban and community forestry in the 13-state southern region. The report contains three major elements:

- 1 Defining the scope of U&CF for purpose of the analysis,
- 2 Constructing and administering the data-collection survey
- 3 Data analytical methods.



II. PROJECT PARTNERS

The research ‘Team’ included principal and co-principal investigators from North Carolina State University, Ohio State University, Virginia Tech, University of Georgia, University of Kentucky, and Mississippi State University. The Team was responsible for data collection, analysis, and reporting. The Team was advised by the project ‘Stakeholders’ on the scope and approach of the project. The Stakeholders were representatives from each participating state, the Virginia Department of Forestry (VDOF), regional International Society of Arboriculture (ISA) chapters, and the United States Department of Agriculture (USDA) Forest Service. For this project, the study area, often referred to as the “southern states,” encompasses the states of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia **F1**. The USDA Forest Service delineates these states under their region 8.

III. PROJECT GOALS AND OBJECTIVES

THE SIX SPECIFIC OBJECTIVES OF THIS PROJECT

- 1

Facilitate discussion and consensus on the scope of the U&CF sector in the southern states, methodology for analysis, and reporting
- 2

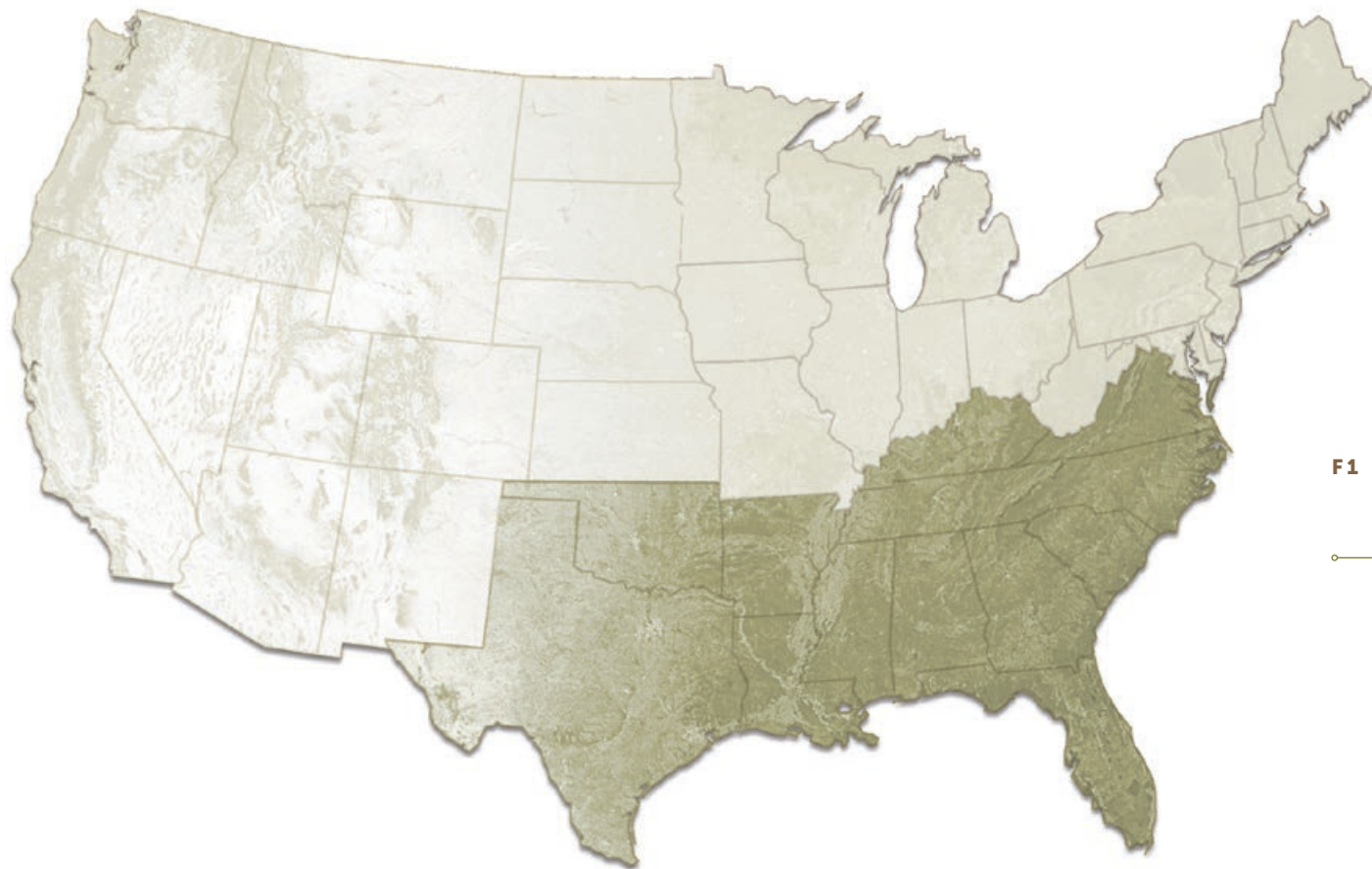
Develop and distribute relevant survey questions in cooperation with the project Team to separate contributions specific to the U&CF sector
- 3

Document methodology and rationale for the selected approach in a written report
- 4

Analyze regional and state-level contributions using the IMPLAN software
- 5

Produce 13 reports and infographics documenting regional and state-level results
- 6

Disseminate information to stakeholders through presentations: one face-to-face and four webinars



**F1 THE 13 SOUTHERN REGION
STATES INCLUDED IN THE STUDY**

- Alabama

Arkansas

Florida

Georgia

Kentucky

Louisiana

Mississippi
- North Carolina

Oklahoma

South Carolina

Tennessee

Texas

Virginia

IV. PROJECT APPROACH

We followed the methodological framework developed for a similar project in the Northeast and Midwest states in the United States (Parajuli et al. 2022). Each step is described in greater detail in subsequent sections of this report. An important aspect of this approach was to regularly communicate with the Virginia Department of Forestry (VDOT) staff about the project details, reporting project status, project timeline extension and information sharing throughout the project period.

The first webinar with all project Team partners and Stakeholders including the representatives for all participating states took place on March 17, 2020. This webinar began with the introductions of every project partner, followed by a review of the timeline for the project, the scope of the project, project methodology and explanation of IMPLAN modeling, and concluded with the discussion of next steps. We used IMPLAN, an input-output regional economic modeling system, to estimate economy-wide ripple effects in the regional economy stemming from direct economic activities in U&CF-related industries. A potential list of U&CF sectors was proposed, and each sector was expanded upon to identify its applicability to U&CF in the region. The conclusion of the first webinar focused on defining the scope of U&CF industries and activities in the region, the survey of all groups, and the next steps for project. Detailed minutes of the webinar are presented in Appendix A.

The COVID-19 pandemic affected the project tremendously, and we had to extend the project timeline several times. The surveys for all U&CF sectors were administered during the fall 2021. We kept the surveys open from July 27, 2021 to December 31, 2021 with multiple reminders. A copy of the survey instruments used in this study is presented in Appendix B. We presented the preliminary results of the data analyses in the ISA Southern Chapter Conference in Winston-Salem NC on March 29, 2022. We also presented the results in the Southern Group of State Foresters Annual Meeting in Greenville SC on the June 7, 2022.

V. SCOPE OF URBAN AND COMMUNITY FORESTRY (U&CF)

In this study, U&CF was defined as all activities (including producing, planting, maintaining, and removing trees) that support or care for the trees in cities, towns, suburbs, and other developed areas. Since there are no well-defined industries specific to U&CF and IMPLAN integrates U&CF into the broader green industry, the first crucial step of economic contribution analysis was to define the scope of the U&CF sector and related activities in the study region. First, a list of private industries as well as public agencies and non-profit organizations involved in U&CF was developed based on an extensive review of available literature and the methodology developed by Parajuli et al. (2022) (T1). The project Team developed the scope of U&CF industries and activities based on discussions with the project Stakeholders during the webinar. Next, all stakeholders and webinar participants were surveyed to develop consensus on the following final list of U&CF-related industries and activities in private, public, and non-profit sectors.

T1 SCOPE OF URBAN FORESTRY IN THE SOUTHERN US

Shown in parentheses for private industries are North American Industry Classification System (NAICS) codes

PRIVATE SECTOR
<ul style="list-style-type: none">Landscaping services (NAICS 561730) Examples include arboriculture, tree pruning, removal, trimming, landscape care and maintenance, ornamental tree/shrub maintenance, plant appraisal.Nursery and tree production (NAICS 111421) Examples include nurseries with tree production for urban and community forestry.Nursery, garden, and farm supply stores (NAICS 444220) Examples include stores retailing nursery trees and garden products that are grown elsewhere.Farm and garden machinery and equipment merchant wholesalers (NAICS 423820) Examples include wholesale distribution of specialized machinery, equipment and parts used in farm, lawn and garden activities.Nursery stock and florists' supplies merchant wholesalers (NAICS 424930) Examples include wholesale distribution of nursery, flowers and tree stocks.Landscape architectural services (NAICS 541320) Examples include land use, city and urban planning services, parks and other recreational areas planning services.
PRIVATE INVESTOR-OWNED AND COOPERATIVE UTILITY COMPANIES
<ul style="list-style-type: none">(NAICS 561730) Examples include overhead utility line and rights-of-way maintenance
PUBLIC AGENCIES
<ul style="list-style-type: none">CitiesCountiesState agencies involved in urban and community forestry
HIGHER EDUCATION INSTITUTIONS
<ul style="list-style-type: none">Management of tree and urban forests on college and university campuses
NON-PROFIT ORGANIZATIONS

VI. SURVEY

Utilizing the framework established by Parajuli et al. (2022) and the information gleaned from U&CF representatives, the Team identified six different groups across the 13-state region to survey: (1) private businesses, (2) county and municipal governments, (3) state agencies, (4) higher education institutions, (5) investor-owned and cooperative utilities, and (6) non-profit organizations. The unique survey instruments for each group are included in Appendix B.

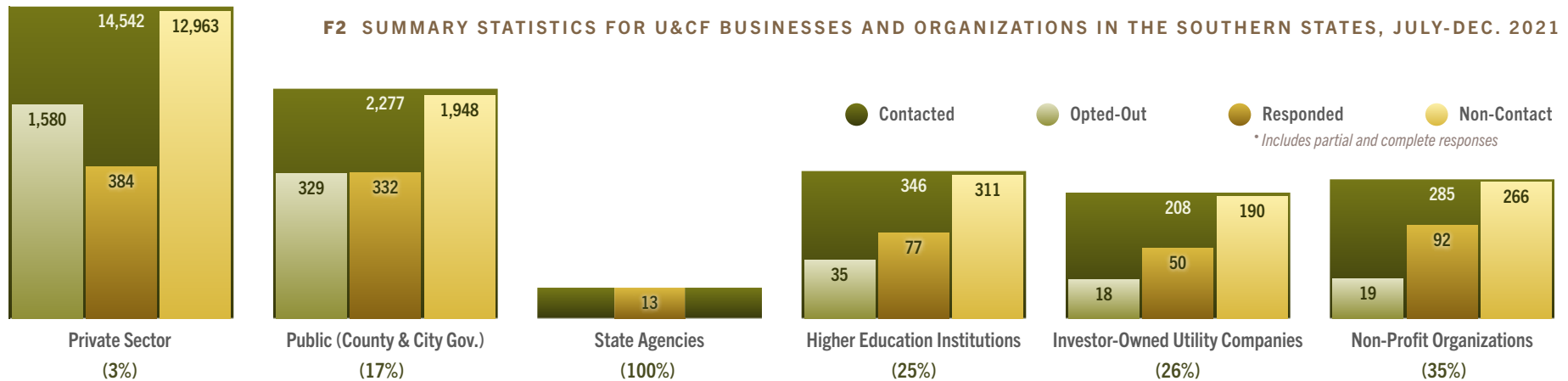
For consistency, we followed the survey instruments used in the Northeastern Midwest project closely to develop the survey instruments used in this study, which were administered using Qualtrics online survey software. The survey instrument for the private sector was primarily designed to separate U&CF from broader green industries as well as to evaluate the current issues and opportunities related to urban and community forest businesses amidst the ongoing COVID-19 pandemic. The survey questions for the public sector focused on capturing the involvement of local and municipal governments and other public agencies in U&CF.

The draft survey instruments were reviewed by the project team and the state partners, with comments and edits incorporated into the final version of the instrument. Before administering the survey, we pre-tested the instruments with at least two selected respondents representing each survey group. The NCSU Institutional Review Board (IRB) approved and exempted all the survey instruments and the administration procedure (IRB-23973). Contact lists of email addresses for U&CF businesses and organizations were compiled by the research team and project stakeholders. North Carolina State University (NCSU) distributed the electronic surveys to the contact lists using an invitation email on July 27 2021, and stopped accepting survey responses on December 31, 2021, after three reminder emails. Table 2 provides a breakdown of the surveys sent and responses received based on each group surveyed.

Since IMPLAN does not specify particular sectors and data associated with solely urban and community forestry, we compiled a complete profile of sales and expenditures of economic activities related to establishment, care, and maintenance of urban forests. While most of the data related to the private sector can be retrieved from publicly available sources, primary surveys are required to fully quantify the U&CF portion of the businesses and activities from the overall green industry. Through the web-based survey of private businesses, the U&CF industries were separated from the broader green industries in each state. Similarly, a primary survey was required to fully quantify the public and nonprofit sector involvement in urban and community forestry. Respondents were asked to answer survey questions about their U&CF activities that occurred during the 2019 calendar year.

The surveys for all groups had a clarifying eligibility question which began each survey. The private industries surveyed were asked if their businesses were active in the region of study. If their answer was “no,” they were brought to the end of the survey. The higher-education and public surveys included a question on involvement in U&CF-related activities. Likewise, if the respondent said “no,” they were brought to the end of the survey. Emails were designated non-responsive if they chose to opt out of the survey or did not complete the survey. Emails were designated null if the message bounced or could not be received. Some of the designated contacts replied with a different person’s email address. When this occurred, the new contact was added to the sample using the next available priority designation. The second, third, and fourth reminder emails included similar information to the first, but with slightly more emphasis on the importance of responding as the reminders increased.

... continued



PRIVATE SECTOR

The contact details of private businesses involved in the green industry were purchased from Exact Data. NCSU sent the email invitation to the survey to 14,542 different private business entities active in the study region. We employed several survey advertisements and promotion strategies to recruit private businesses working in U&CF in the study region. Only 384 private business contacts completed the survey. After accounting for the opt-out and invalid addresses, the adjusted response rate of the private business sample is 3.0%.

PUBLIC (COUNTY AND MUNICIPAL GOVERNMENT)

The VDOF worked with the other state partners to provide a list of 2,277 email addresses from public agencies in the 13 states. Similar to the private business sample, we closed the survey response window on December 31, 2021. By the closing date, only 332 respondents completed the survey fully and partially. This produced an adjusted response rate of 17%. Similarly, state partners from all 13 states submitted the survey responses back with all the necessary information needed for economic contribution analysis.

INVESTOR-OWNED UTILITIES WORKING IN TREE-LINE MAINTENANCE

The VDOF collaborated with state partners to collect the contact information of 208 investor-owned and member-owned cooperative utility companies in the southern region. Of the total contacts, 50 utility companies completed the survey by the closing date, leading to an adjusted response rate of 26.3%.

HIGHER EDUCATION INSTITUTIONS

The VDOF worked with the rest of the state partners to compile the list of all the higher education institutions in 13 states. Out of 346 contacts, 77 higher education institutions responded to the survey. Following the closure of the survey window on December 2021, about 25% of the higher education institutions responded to the survey. Investor-owned and cooperative utilities working in tree-line maintenance

NON-PROFIT ORGANIZATIONS

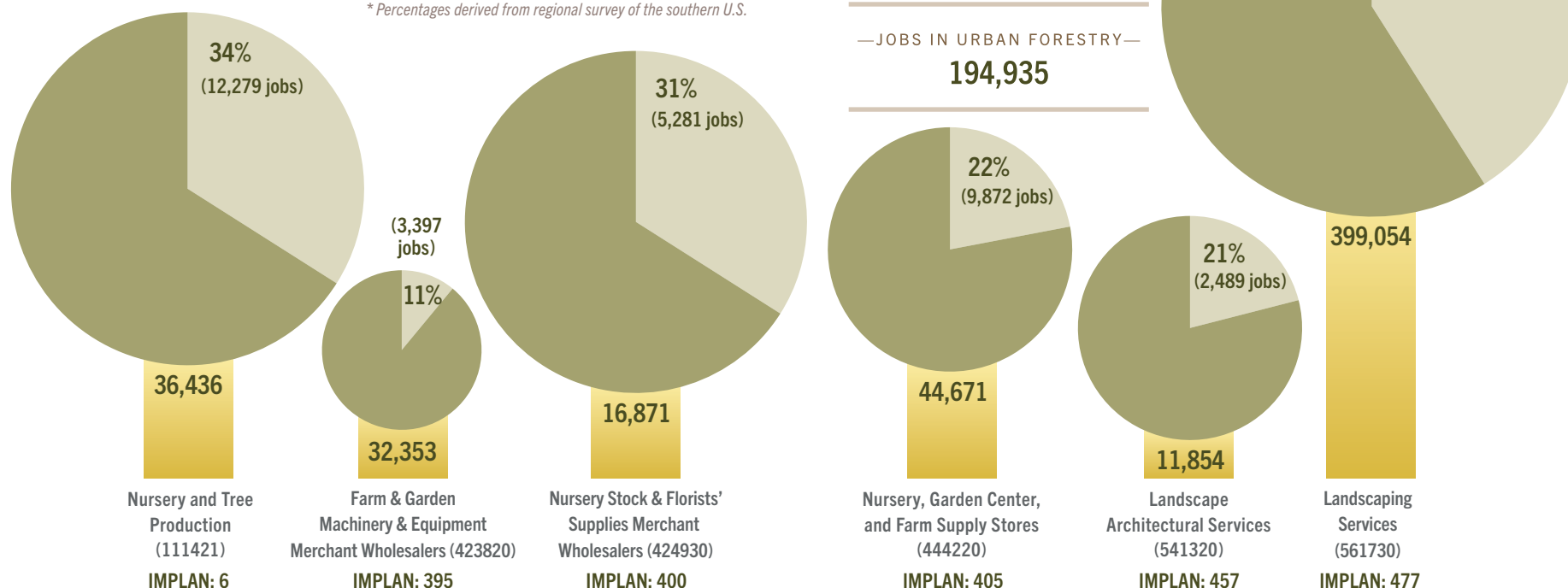
The VDOF worked with state partners to collect the contacts of non-profit organizations in the study region. Out of 285 non-profit organizations, 92 organizations completed the survey fully or partially, resulting in an adjusted response rate of 35%.

VII. EMPLOYMENT IN U&CF

F3 U&CF JOBS IN PRIVATE SECTOR, 2019

● Total Jobs ● Percent of Employees U&FC-related* and Number of Jobs in U&FC ● Jobs in the Rest of the Industry

* Percentages derived from regional survey of the southern U.S.

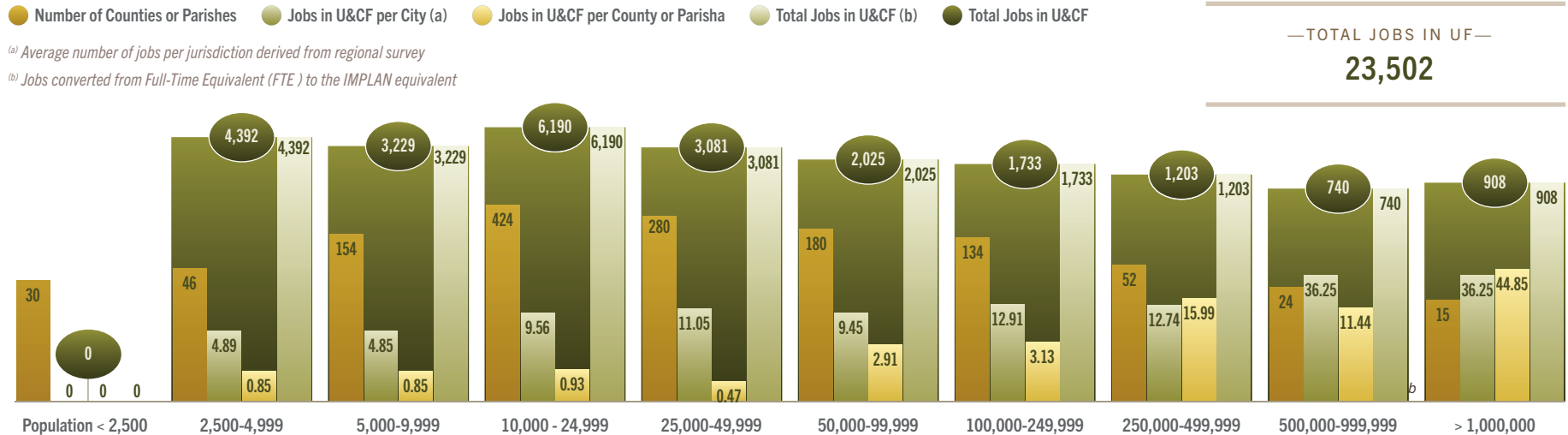


Using the data obtained from primary surveys, a complete profile of employment statistics associated with urban forestry businesses and activities for each group was developed, which was a key input in IMPLAN modeling. For the private industries, the 2018 employment numbers (including full-, part-time and seasonal employees) in each North American Industry Classification System (NAICS) category are obtained from the Census of Employment and Wages (CEW) from the US Bureau of Labor Statistics (US BLS, 2021). Since CEW does not incorporate self-employed jobs and businesses with their own social insurance programs (IMPLAN Data Team, 2021), the 2017 IMPLAN data is utilized to compute proprietary jobs specifically in landscaping services (NAICS 561730) and Nursery and tree production businesses (NAICS 111421). The 2017 IMPLAN data is selected to leverage the dataset purchased

for another similar project in the region: Forest Products Industries' Economic Contributions in the Northeast-Midwest area—2017. IMPLAN augments proprietary jobs to the CEW employment statistics using the Regional Economic Accounts (REA) data from the Bureau of Economic Analysis (IMPLAN Data Team, 2021). The proportions of self-employed jobs to the CEW reported statistics for IMPLAN industries 6, 449, and 469 in 2017 was estimated, and used those proportions to estimate total jobs in respective industries in 2018 (F3). Then, the average percentage of jobs involved in urban forestry obtained from our surveys were used to estimate the total number of urban forestry jobs in each private green industry business in the study region. There were 237,455 jobs in urban forestry in 2018, directly supported by private businesses involved in green industries (F3).

... continued

F4 U&CF JOBS IN PUBLIC AGENCIES, 2019

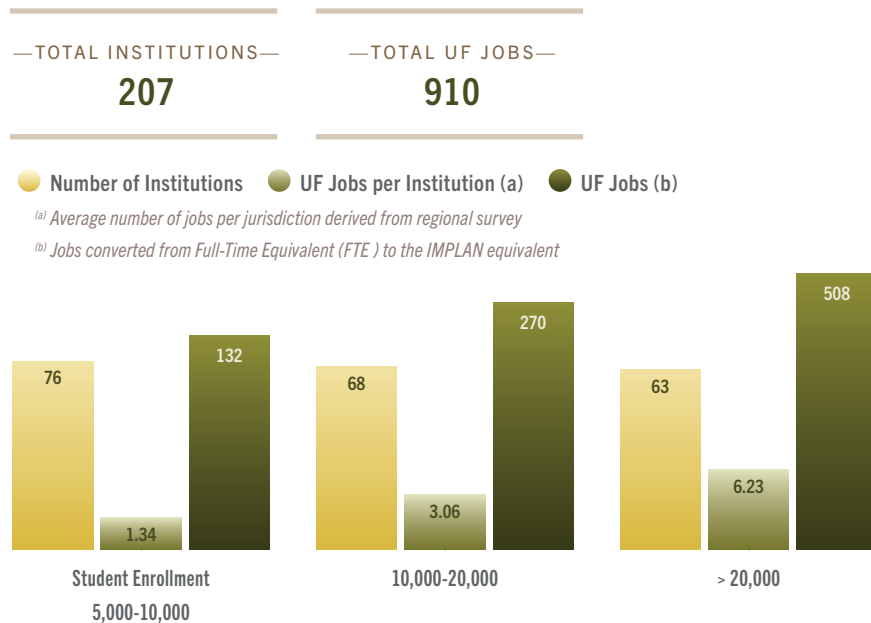


Since investor-owned and member-owned cooperative utility companies are also involved in tree-line clearing and vegetation management in urban and suburban regions, their involvement in U&CF in the study region was also included. According to the regional survey of utility companies, the average in-house expenses in vegetation management in 2019 was estimated to be \$1.06 million per company. Total expenditures by investor-owned and cooperative utilities in vegetation management were calculated by multiplying the number of the utility companies and cooperatives in the study area by the average expenditure per company. Based on the total expenditures, the regional IMPLAN model imputed the total number of U&CF jobs (5,045) in the 13 states supported by utility companies in landscaping and horticultural services (IMPLAN Industry 469).

Similarly, total public employees involved in U&CF were also estimated based on the population size of the jurisdiction that these agencies serve in the study region. The number of incorporated places (“municipalities”) and counties or parishes in all 13 states by their population sizes were obtained from the Population Division of the U.S. Census Bureau (US Census Bureau, 2021). Then, the average numbers of employees in a municipality and county estimated from our regional survey were used to estimate the total number of jobs in U&CF employed by municipal and county or parish governments (F4). In 2019, it is estimated that county and municipal governments in 13 southern states employed 23,502 people directly working in U&CF activities. Moreover, the number of employees in state forestry or natural resources agencies directly involved in U&CF was also included in the economic contribution analysis. According to information collected from state representatives, in 2019, state agencies employed 58 full-time, part-time, and seasonal positions in the study region.

. . . continued

F5 U&FC JOBS IN HIGHER EDUCATION INSTITUTIONS, 2019



The total jobs related to U&CF supported by higher education institutions are estimated based on their student enrollment size. First, the total number of higher education institutions and student enrollments are collected from various publicly available sources in each state. The total U&CF jobs in colleges and universities are estimated by multiplying the number of institutions by the average number of U&CF jobs per institution estimated from our regional survey of higher education institutions (**F5**). In 2019, there were 910 direct jobs from higher education institutions involved in U&CF activities in the study region.

F6 URBAN FORESTRY JOBS IN NON-PROFIT ORGANIZATIONS, 2019 (232 U&CF JBOS IN THE STUDY REGION)



As far as the total jobs related to U&CF supported by non-profit organizations (NPOs) in the study region, we found that, on average, an U&CF NPO supports 1 job in landscaping services, 0.8 jobs in forestry consulting services, 0.5 jobs in architectural services, and 0.3 jobs in nursery and tree production (**F6**). Collectively, we estimate that, in 2019, NPOs in the 13 states supported 669 jobs directly working in U&CF activities.

VIII. IMPLAN METHODOLOGY

ECONOMIC CONTRIBUTION ANALYSIS

We applied the empirical approach developed by Parajuli et al. (2022) to evaluate the economic contribution of U&CF industries and activities in the study region. Economic contributions are usually evaluated in terms of several business and economic metrics such as employment, labor income, value-added, industry output, and local, state, and federal tax collections. The IMPLAN software, an input-output regional economic modeling system, was used to estimate economy-wide ripple effects in the regional economy stemming from direct economic activities in U&CF-related industries. State-level IMPLAN models from 13 states were aggregated to develop a regional input-output model with a trade flows specification and social accounts for households. In terms of an economic contribution method, the method one for multisector contribution analysis explained in Parajuli et al. (2018) was employed. The commodity production coefficients were normalized to one and zeroed out local use ratios for the related IMPLAN industries to account for the contribution analysis of the existing industries in the 13-state regional economy.

In the regional IMPLAN model, the employment statistics from **F3-F6** were entered to set up events and activities in respective IMPLAN industry sectors. For instance, U&CF jobs in landscaping services, nursery and tree production, and landscape architectural services supported by the private sector were entered in IMPLAN sectors 477, 6, and 457, respectively. The industry sectors involved in retail and wholesale businesses (IMPLAN 395, 400, and 405) were adjusted using the margins analysis (Clouse, 2021). Jobs supported by investor-owned and cooperative utility companies were entered in IMPLAN industry 477.

Modeling the contribution of government enterprises and public universities is quite complicated in IMPLAN, as the industry sectors representing employment and payroll of government employees in the software do not consist of intermediate expenditures attributed to them directly (Clouse, 2021). Using the developed complete employment profile of these local and state governments, higher education institutions and non-profit organizations, the analysis-by-part (ABP) method for the labor income spending pattern was used to estimate indirect and induced effects for all these public sectors. The spending patterns of these government payroll jobs should be linked with private industries. As public agencies and organizations are mostly involved in arboriculture, tree planting, and management, their contributions are lined up well with IMPLAN industry 477. Hence, to model the public sector's economic contribution, expenditure values from the jobs profile in IMPLAN sector 477 were imputed and then, using those expenditure values, the labor income ABP procedure was applied to estimate indirect and induced effects in IMPLAN sector 477 by the public agencies (Lucas 2019; B. Barlow, personal communication). This procedure was applied to estimate the economic contribution of the involvement of counties, cities, state agencies, higher education institutions, and non-profit organizations in U&CF in the study region.

REFERENCES

Clouse, C., 2021. *Margins and Deflators*. IMPLAN. Retrieved August 18, 2021 from <https://implanhelp.zendesk.com/hc/en-us/articles/115009506007-Margins-Deflators>.

IMPLAN Data Team, 2021. CEW data details. Retrieved August 18, 2021 from <https://support.implan.com/hc/en-us/articles/115009679608-CEW-FAQ>.

Lucas, M., 2019. *IMPLAN Pro: Providing Analysis-by-Parts with a Comparison of Event Types*. IMPLAN. Retrieved August 18, 2021 from <https://support.implan.com/hc/en-us/articles/115009542287-Case-Study-Analysis-By-Parts>.

Parajuli, R., Chizmar, S., Hoy, M., Joshi, O., Gordon, J., Mehmood, S.,... and Buntrock, L. 2022. *Economic Contribution Analysis of Urban Forestry in the Northeastern and Midwestern States of the United States in 2018*. *Urban Forestry & Urban Greening* 69(127490), pp. 1-9. <https://doi-org.prox.lib.ncsu.edu/10.1016/j.ufug.2022.127490>.

Parajuli, R., Henderson, J.E., Tanger, S., Joshi, O., Dahal, R., 2018. *Economic Contribution Analysis of the Forest-Product Industry: A Comparison of the Two Methods for Multisector Contribution Analysis Using IMPLAN*. *Journal of Forestry* 116(6), pp. 513-519. <https://doi.org/10.1093/jofore/fvy047>.

United States Bureau of Labor Statistics [US BLS], 2021. *Quarterly Census of Employment and Wages: Various years*. U.S. Bureau of Labor Statistics. Retrieved August 18, 2021 from <https://www.bls.gov/cew/>.

United States Census Bureau, 2021. *Annual estimates of the resident populations*. Population Division, U.S. Census Bureau. Retrieved August 18, 2021 from <https://www.census.gov/topics/population.html>.



APPENDIX A: SOUTHERN URBAN AND COMMUNITY FORESTRY MEETING MINUTES

PARTICIPANTS

Sayed Mehmood
Rajan Parajuli
Morgan Hoy
Misty Booth
Dale Dickens
Eric Wiseman
Thomas Ochvodlho
Will Liner
Andy Pleninger
Bridget Abernathy
Frances Wade
Jason Gordon
Lara Johnson
Paul Johnson
Robert Seemann
Ryan Morris
Molly O'Liddy
1(434) 977-6555
1(501) 580-4058
1(404) 909-0266
1(580) 231-1770
"BE10DWG"
"Shrestha.99"
"hfisher"



Date.....03/17/2020
Time 10:00 am (EST)
Location Zoom Call

Meeting began with introductions of project professors and project overview

Review of the Southern region of focus and introduction of team members from every participating state

Dr. Parajuli discussed the scope of work

- Economic analysis of the contributions of urban and community forestry in the southern region of the United States
- There will be a regional report in addition of state specific reports
- The goal is to follow similar scope and methodology as the urban and community forestry study being completed in the Northern region
- Primary data will come from IMPLAN and the United States Census Bureau
- Project team leaders will communicate with partners via zoom meetings and face to face meeting throughout the project to maintain transparency and open communication

Dr. Parajuli discussed the project timeline and feasibility

- A bit behind schedule due to paperwork
- End of project deliverables are due by August 2021, this may not be achievable

Dr. Parajuli explained NAICS codes

- Explained in context of Northeastern project
- Explained the difference between public and private sectors
- Reference meeting PowerPoint for in depth explanation

** Others may have joined the call throughout meeting.*

... continued

Eric Wiseman continued meeting

- Believes this is a good opportunity to put forth useful information for research and policy
- In depth discussion of mind-map and subsequent application
 - Potential importance of urban wood products
 - Emphasis on importance of vast scope of what is included in urban forestry
 - Reference attached mind-map in meeting PowerPoint for in depth view
- Dr. Parajuli followed with how NAICS code 561730 included a vast majority of urban forestry products and production, may include urban wood products

Dr. Parajuli agreed there is discrepancy in what sectors to include in private and public sectors, but project partners and team need to come to an agreement to maintain the project timetable and remain within budgetary constraints

Dr. Mehmood spoke to importance of maintaining consistency across research but also being open to change if the Southern states have special case scenarios

- Dr. Parajuli agreed and maintained this as a fluid discussion

Lara Johnson spoke to the importance of project partners reaching out for contact lists now so the project can remain on the appropriate timeline

Dale Dickens asked if there was a list of standardized questions on what information the project needs from counties

- Dr. Parajuli said it depends on what the project needs from the counties
- Dr. Parajuli also stated how the project team is developing the survey, project partners are to collect contact information for businesses and public sectors

Dr. Mehmood spoke to importance of first step is clarifying scope of work and the survey will come after scope of work consensus

- Emphasized how mind-map shows how complicated this project can be
- Spoke to survey
 - Database is IMPLAN which pulls information from the United States Census Bureau which is information from the federal government
 - The purpose of the survey is to refine information that is already in the database
 - There will be two surveys, one for the private sector and one for the public sector
 - The goal of both the private and public sector surveys will be to know what type of operations are taking place, where are the primary locations of operations, what percentage of budget goes towards urban and community forestry, what is the monetary dollar amount going towards urban and community forestry

Dr. Parajuli spoke to the role of project team in the North Eastern region project is to develop the survey questions and they (the project partners) are responsible for distributing the questions

- Reference to the company Dunn & Bradstreet as potential source of contact lists for entities needing to be surveyed
- Does cost money, unsure if purchasing the lists are in the budget

Dr. Parajuli gave an in depth IMPLAN explanation

- Once the survey is out and results come back, the next step will be IMPLAN analysis
- Difference between direct, indirect, and induced effects Reference meeting PowerPoint for in depth explanation of every definition
- Explanation on how this is a contribution analysis study, not an impact analysis study
- Study to be completed using model 1 in IMPLAN, the customizable model
- Does cost money, unsure if purchasing the lists are in the budget

Dr. Parajuli spoke to project next steps

- A survey to confirm urban and community forestry sectors will be sent out in the next month
- There was supposed to be an in-person meeting of the team members, this has been postponed due to the virus
- Potentially another meeting in May to compensate for the cancellation of this month's (March) meeting
- Report template will be developed at a later date when there is information to report on

Lara Johnson reached out to WDNR to discuss their contractor, and Mrs. Johnson has since reached out to the contractor to discuss acquiring contact information

Eric Wiseman emphasized importance of partners beginning to think about contact lists and potential individual membership organizations

Dr. Parajuli concluded the meeting

APPENDIX B: SURVEY INSTRUMENTS

PRIVATE SECTOR SURVEY INSTRUMENT

INTRODUCTION

This regional study, which aims to assess the economic contributions of urban and community forestry in the Southern United States, has been contracted by the southern states forestry agencies to North Carolina State University and several partner institutions. In this study, urban and community forestry (U&CF) is defined as all activities that support or care for the trees in cities, towns, suburbs, and other developed areas (including producing, planting, maintaining, and removing trees).

CONFIDENTIALITY AND CONSENT

We invite the person in your company most familiar with your business operations to complete this brief questionnaire, which will take about 5-10 minutes. Your participation in this study is voluntary. You may cease participation or exit the questionnaire at any time by simply closing your internet browser. All of your responses to this questionnaire are confidential and no personally identifying information will be recorded and published anywhere. Please note that there is not any direct compensation for participating in this survey. Information you share will be aggregated with other respondents for analysis and will not be reported in any way that may reveal your identity. By clicking the “Yes, I consent to participate in this study and wish to continue” option, you consent to participate in this study. If you have questions about your rights as a participant or are concerned with your treatment throughout the research process, please contact the NC State University IRB Director at IRB-Director@ncsu.edu, 919-515-8754.

Questions about the study: If you have questions about the study, you may contact Dr. Rajan Parajuli, Assistant Professor at North Carolina State University at 919-513-2579 or urban_forestry@ncsu.edu. *This study is being conducted in association with the following agencies and institutions:*

- ☐ **Yes, I consent to participate in this study and wish to continue**
- ☐ **No, I do not consent to participate in this study and do not wish to continue**

INSTRUCTIONS TO COMPLETE THE QUESTIONNAIRE

To choose a response, click on the button that corresponds to your answer. If you would like to change your answer, click on a different button. You may go back to earlier screens by clicking the ‘BACK ‘ button at the bottom of the screen. To advance to the next screen click the ‘NEXT’ button. If you start the questionnaire and are unable to finish it, you can pause your response by simply closing the browser window and then return to it later by clicking again on the link in the email we sent you. This will take you back to the next unanswered question. If there is a question you leave blank, you will be informed that it was left blank. You may then either return to answer that question or continue on to the next question. After the questionnaire has been completed you will not be able to re-enter the questionnaire.

We appreciate your time and effort in assisting us by completing this web-based questionnaire.

... continued

PRIVATE SECTOR **SURVEY INSTRUMENT**

The COVID-19 Pandemic of the past 18 months has disrupted many industries and organizations. Therefore, please answer these questions to the best of your ability based on your activities during 2019 prior to the pandemic.

Click next to begin the questionnaire. **NEXT →**

Q1

This is a study of the Southeast Region, which includes the states of:

- | | | |
|----------|----------------|-----------|
| Alabama | Lousiana | Tennessee |
| Arkansas | Mississippi | Texas |
| Florida | North Carolina | Virginia |
| Georgia | Oklahoma | |
| Kentucky | South Carolina | |

Q2

In 2019, in which Southern state did you have your greatest sales and revenues?

DROP DOWN LIST OF 13 STATES

Please think back to the year 2019. In 2019, was your business involved in any of the states listed above?

☐ **YES** ☐ **NO**

END

This survey is meant for organizations operating in any of the 13 southern states listed above. If your organization was not active in these states, please click the “Next” button to end the survey. If your organization was active in these states, please click the “Back” button to change your answer and continue the survey. We thank you for your time!

PRIVATE SECTOR SURVEY INSTRUMENT

Q3

In 2019, in which of the following business activities was your business engaged?

Were you engaged in . . .

. . . landscape or tree care services?

E.g., arboriculture, tree pruning, removal, trimming, landscape care and maintenance, ornamental tree and shrub maintenance, plant appraisal, overhead utility line and rights-of-way maintenance.

☐ YES ☐ NO

. . . nursery, greenhouse, and tree production?

E.g., nurseries with tree production for urban forestry.

☐ YES ☐ NO

. . . nursery and garden supply stores?

Examples include stores retailing nursery trees and garden products that are grown elsewhere.

☐ YES ☐ NO

. . . farm/garden/machinery/ equipment merchant wholesales?

E.g., wholesale distribution of specialized machinery, equipment and parts used in farm, lawn and garden activities.

☐ YES ☐ NO

. . . nursery and florist's supplies merchant wholesalers?

E.g., wholesale distribution of nursery, flowers and tree stocks.

☐ YES ☐ NO

. . . urban forestry consulting services?

E.g., foresters working in urban forest management – conducting inventories and writing management plans and ordinances.

☐ YES ☐ NO

. . . landscape architectural and design services?

E.g., land use and city planning services, urban planning services, parks and other recreational areas planning services.

☐ YES ☐ NO

. . . other similar services? Please specify

PRIVATE SECTOR SURVEY INSTRUMENT

Q3 A

The next question is about the percentage of total sales and revenue you had from each of the business activities below in 2019. The answers should sum up to 100%. For instance, if your nursery supply store also sold garden machinery equipment, please split the total sales and revenues representing both nursery and equipment revenues so they add up to 100%. Please enter zero for activities your business did not engage in at all.

In 2019, in

. . . . landscape or tree care services?	<input type="text"/>	%
. . . . nursery, greenhouse, and tree production?	<input type="text"/>	%
. . . . nursery and garden supply stores?	<input type="text"/>	%
. . . . farm/ garden machinery/equipment merchant wholesales?	<input type="text"/>	%
. . . . nursery and florist's supplies merchant wholesalers?	<input type="text"/>	%
. . . . urban forestry consulting services?	<input type="text"/>	%
. . . . landscape architectural and design services?	<input type="text"/>	%
. . . . other similar services? (Specify)	<input type="text"/>	%
TOTAL		100%

Q4

In 2019, did your business generate revenue from selling wood waste and by-products generated from tree care activities (timber, firewood, chips, mulch)?

Timber to sawmills or woodworkers	<input type="radio"/> YES	<input type="radio"/> NO
Wood residues/chips to power generators	<input type="radio"/> YES	<input type="radio"/> NO
Firewood	<input type="radio"/> YES	<input type="radio"/> NO
Wood chips for mulch or compost	<input type="radio"/> YES	<input type="radio"/> NO
Other (Specify)	<input type="text"/>	

Q5

In 2019, what were the approximate total sales and revenue (gross, pre-tax) for all products and services sold by your business? Data needed to answer this question may be unavailable or accessible, but provide your best estimate.

<input type="radio"/> LESS THAN \$10,000	<input type="radio"/> \$500,000 TO \$999,999
<input type="radio"/> \$10,000 TO \$49,999	<input type="radio"/> \$1,000,000 TO \$2,499,999
<input type="radio"/> \$50,000 TO \$99,999	<input type="radio"/> \$2,500,000 TO \$4,999,999
<input type="radio"/> \$100,000 TO \$249,999	<input type="radio"/> \$5,000,000 TO 9,999,999
<input type="radio"/> \$250,000 TO 499,999	<input type="radio"/> \$10,000,000 OR MORE

PRIVATE SECTOR SURVEY INSTRUMENT

Q6A

In this study, urban and community forestry is defined as all activities that support or care for the trees in cities, towns, suburbs, and other developed areas (including producing, planting, maintaining, and removing trees). In 2019, in Q2, where you had your highest total sales and revenues, what percent of total sales and revenues from your business was for urban and community forestry-related products or services? Data needed to answer this question may be unavailable or accessible, but provide your best estimate.

PERCENT OF SALES AND REVENUE NOT SURE

Q6B

If you are not sure of the exact percentage of urban and community forestry-related sales and revenue your business had in 2019 in Q2 could you estimate the range?

<input type="text"/>	0 TO 9%	<input type="text"/>	50% TO 59%
<input type="text"/>	10% TO 19%	<input type="text"/>	60% TO 69%
<input type="text"/>	20% TO 29%	<input type="text"/>	70% TO 79%
<input type="text"/>	30% TO 39%	<input type="text"/>	80% TO 89%
<input type="text"/>	40% TO 49%	<input type="text"/>	90% TO 99%
		<input type="text"/>	100%

Q7

In 2019, how many people did your business in Full-time worker - for a calendar month, employed on average at least 30 hours of service per week, or 130 hours of service per month. **Part-time worker** - employed less than 30 hours per week or less than 130 hours per month. **Temporary employee** - usually hired when other employees are absent (due, for example, to maternity or disability leave) and to fill a temporary vacancy when needed. These employed may be hired through an agency. **Seasonal employee** - hired when a firm needs extra help during certain seasons of the year, for example, during the Spring. Data needed to answer this question may be unavailable or accessible, but provide your best estimate.

Number of employees

<input type="text"/>	FULL-TIME	<input type="text"/>	PART-TIME	<input type="text"/>	TEMP
<input type="text"/>	SEASONAL	<input type="text"/>	VOLUNTEER		

Average percentage of time on urban and community forestry-related activities (0-100%)?

<input type="text"/>	FULL-TIME	<input type="text"/>	PART-TIME	<input type="text"/>	TEMP
<input type="text"/>	SEASONAL	<input type="text"/>	VOLUNTEER		

PRIVATE SECTOR SURVEY INSTRUMENT

Q8

Listed below are some potential challenges to the profitability of urban and community forestry businesses in your region. Rate how significant each challenge is for your business.

... Safety infractions and workplace accidents

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Lack of safety and health (OSHA) oversight on industry

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Access to employee training

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Insurance coverage and claims costs

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Lack of qualified personnel

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Personnel turnover

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Workforce diversity

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Landscape debris disposal costs

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Unqualified competition in the marketplace

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Consumer awareness of quality services

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Market competition

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Market uncertainty

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Other (specify)

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

PRIVATE SECTOR SURVEY INSTRUMENT

Q9

How has the COVID-19 Pandemic impacted the urban and community forestry segment of your business?

- ☐ VERY NEGATIVE ☐ SOMEWHAT NEGATIVE ☐ NEUTRAL
☐ SOMEWHAT POSITIVE ☐ EXTREMELY POSITIVE

Q10

During the pandemic, how much have your sales and revenues decreased on a percentage basis? Data needed to answer this question may be unavailable or accessible, but provide your best estimate.

%

Q11

Are the changes related to the Pandemic temporary or permanent? and % decrease in business. Data needed to answer this question may be unavailable or accessible, but provide your best estimate.

TEMPORARY % decrease in business

PERMANENT % decrease in business

Q12

Given the impacts of the COVID-19 Pandemic, how would you describe the future outlook for the urban and community forestry segment of your business?

- ☐ VERY NEGATIVE ☐ SOMEWHAT NEGATIVE ☐ NEUTRAL
☐ SOMEWHAT POSITIVE ☐ EXTREMELY POSITIVE

Q13

How has your business been adapting to the pandemic? Select all that apply.

- ☐ RELYING ON THE FEDERAL PAYCHECK PROTECTION PROGRAM
☐ LAY-OFF EMPLOYEES ☐ HIRING EMPLOYEES
☐ SELL OFF FIXED ASSETS ☐ INCREASING MARKETING
☐ DECREASING MARKETING
☐ OTHER(S), PLEASE EXPLAIN

Q14

In what year was your business established?

PRIVATE SECTOR SURVEY INSTRUMENT

Q15

What is the business owner’s education level?

- ☐ HIGH SCHOOL INCOMPLETE
- ☐ HIGH SCHOOL COMPLETE
- ☐ ASSOCIATE’S DEGREE
- ☐ BACHELOR’S DEGREE
- ☐ ADVANCED DEGREE (MASTERS OR PHD)
- ☐ DO NOT WISH TO SHARE

Q16

What is the business owner’s gender?

- ☐ MALE
- ☐ FEMALE
- ☐ NON-BINARY
- ☐ DO NOT WISH TO SHARE

Q17

What is the business owner’s race?

- ☐ WHITE
- ☐ BLACK OR AFRICAN AMERICAN
- ☐ ASIAN
- ☐ HISPANIC, LATINO OR SPANISH
- ☐ INDIAN AMERICAN
- OTHER (SPECIFY)
- ☐ DO NOT WISH TO SHARE

Q18

Which one of the following best describes the organizational structure of your business?

- ☐ SOLE PROPRIETORSHIP
- ☐ CORPORATION
- ☐ LIMITED LIABILITY COMPANY OR LLC
- ☐ TRUST

OTHERS (SPECIFY)

Q19

What is the zip code of your business’s primary address?

End of Survey You have reached the end of the questionnaire. To finalize and submit your response, click the “Next” arrow below.

NEXT →

To edit your response click the “Back” arrow below.

← BACK

When you are ready to submit your data, please click SUBMIT below.

SUBMIT

INVESTOR-OWNED UTILITIES SURVEY INSTRUMENT

INTRODUCTION

This regional study, which aims to assess the economic contributions of urban and community forestry in the Southern United States, has been contracted by the southern states forestry agencies to North Carolina State University and several partner institutions. In this study, urban and community forestry (U&CF) is defined as all activities that support or care for the trees in cities, towns, suburbs, and other developed areas (including producing, planting, maintaining, and removing trees).

CONFIDENTIALITY AND CONSENT

We invite the person in your company most familiar with your business operations to complete this brief questionnaire, which will take about 5-10 minutes. Your participation in this study is voluntary. You may cease participation or exit the questionnaire at any time by simply closing your internet browser. All of your responses to this questionnaire are confidential and no personally identifying information will be recorded and published anywhere. Please note that there is not any direct compensation for participating in this survey. Information you share will be aggregated with other respondents for analysis and will not be reported in any way that may reveal your identity. By clicking the “Yes, I consent to participate in this study and wish to continue” option, you consent to participate in this study. If you have questions about your rights as a participant or are concerned with your treatment throughout the research process, please contact the NC State University IRB Director at IRB-Director@ncsu.edu, 919-515-8754.

Questions about the study: If you have questions about the study, you may contact Dr. Rajan Parajuli, Assistant Professor at North Carolina State University at 919-513-2579 or urban_forestry@ncsu.edu. *This study is being conducted in association with the following agencies and institutions:*

- ☐ **Yes, I consent to participate in this study and wish to continue**
- ☐ **No, I do not consent to participate in this study and do not wish to continue**

INSTRUCTIONS TO COMPLETE THE QUESTIONNAIRE

To choose a response, click on the button that corresponds to your answer. If you would like to change your answer, click on a different button. You may go back to earlier screens by clicking the ‘BACK ‘ button at the bottom of the screen. To advance to the next screen click the ‘NEXT’ button. If you start the questionnaire and are unable to finish it, you can pause your response by simply closing the browser window and then return to it later by clicking again on the link in the email we sent you. This will take you back to the next unanswered question. If there is a question you leave blank, you will be informed that it was left blank. You may then either return to answer that question or continue on to the next question. After the questionnaire has been completed you will not be able to re-enter the questionnaire.

We appreciate your time and effort in assisting us by completing this web-based questionnaire.

. . . continued

INVESTOR-OWNED UTILITIES SURVEY INSTRUMENT

The COVID-19 Pandemic of the past 18 months has disrupted many industries and organizations. Therefore, please answer these questions to the best of your ability based on your activities during 2019 prior to the pandemic.

Click next to begin the questionnaire. **NEXT →**

Q1

Thinking of 2019, in which of the following state/s was your company active?

- | | | |
|--------------------------------|--------------------------------------|---------------------------------|
| <input type="radio"/> Alabama | <input type="radio"/> Louisiana | <input type="radio"/> Tennessee |
| <input type="radio"/> Arkansas | <input type="radio"/> Mississippi | <input type="radio"/> Texas |
| <input type="radio"/> Florida | <input type="radio"/> North Carolina | <input type="radio"/> Virginia |
| <input type="radio"/> Georgia | <input type="radio"/> Oklahoma | |
| <input type="radio"/> Kentucky | <input type="radio"/> South Carolina | |

☐ None of the Above

This survey is meant for organizations operating in any of the 13 southern states listed above. If your organization was not active in these states, please click the “Next” button to end the survey. If your organization was active in these states, please click the “Back” button to change your answer and continue the survey. We thank you for your time!

Q2

In this study, urban and community forestry is defined as all activities that support or care for the trees in cities, towns, suburbs, and other developed areas (including producing, planting, maintaining, and removing trees).

In 2019, what was your company’s total operating budget (\$) for urban and community forestry activities across all states? Please include all tree-related expenses accounting for personnel, fringes, benefits, overhead, equipment and supplies. Data needed to answer this question may be unavailable or accessible, but we ask that you provide your best estimate.

\$

Q3

In 2019, what percentage of your company’s total operating budget for urban and community forestry activities was expended in each state? Data needed to answer this question may be unavailable or accessible, but we ask that you provide your best estimate.

%

INVESTOR-OWNED UTILITIES SURVEY INSTRUMENT

Q3A

Of your company’s total operating budget for urban and community forestry activities in 2019, what percentage was sub-contracted to private businesses such as consultants, landscapers, and arborists? **Knowing this percentage will help us avoid double-counting the economic contributions of sub-contractors who also reply to this survey.* Data needed to answer this question may be unavailable or accessible, but we ask that you provide your best estimate. %

Q4

Listed below are potential challenges to success of companies in the utility sector of urban and community forestry. Rate how significant each challenge is for your company.

... FERC regulations

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Workforce health and safety compliance

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Lack of qualified personnel

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Personnel turnover

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Workforce diversity

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Insurance coverage and claims costs

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Industry leadership

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Storm and wildfire threats to utilities

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Leveraging technology for decision-making

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Other (specify)

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

☐ ☐ ☐
☐ ☐

... continued

INVESTOR-OWNED UTILITIES SURVEY INSTRUMENT

Q5

How has the COVID-19 Pandemic impacted your company's urban and community forestry activities?

- ☐ VERY NEGATIVE ☐ SOMWHAT NEGATIVE ☐ NEUTRAL
☐ SOMEWHAT POSITIVE ☐ EXTREMELY POSITIVE

Q6

Given the impacts of the COVID-19 Pandemic, how would you describe the future outlook for your company's urban and community forestry activities?

- ☐ VERY NEGATIVE ☐ SOMWHAT NEGATIVE ☐ NEUTRAL
☐ SOMEWHAT POSITIVE ☐ EXTREMELY POSITIVE

Q7

Would you like to tell us more about the future outlook of urban and community forestry for your company?

Q8

What is the zip code of your company's primary address?

End of Survey You have reached the end of the questionnaire. To finalize and submit your response, click the "Next" arrow below.

NEXT →

To edit your response click the "Back" arrow below.

← BACK

When you are ready to submit your data, please click SUBMIT below.

SUBMIT

PUBLIC SECTOR SURVEY INSTRUMENT

INTRODUCTION

This regional study, which aims to assess the economic contributions of urban and community forestry in the Southern United States, has been contracted by the southern states forestry agencies to North Carolina State University and several partner institutions. In this study, urban and community forestry (U&CF) is defined as all activities that support or care for the trees in cities, towns, suburbs, and other developed areas (including producing, planting, maintaining, and removing trees).

CONFIDENTIALITY AND CONSENT

We invite the person in your company most familiar with your business operations to complete this brief questionnaire, which will take about 5-10 minutes. Your participation in this study is voluntary. You may cease participation or exit the questionnaire at any time by simply closing your internet browser. All of your responses to this questionnaire are confidential and no personally identifying information will be recorded and published anywhere. Please note that there is not any direct compensation for participating in this survey. Information you share will be aggregated with other respondents for analysis and will not be reported in any way that may reveal your identity. By clicking the “Yes, I consent to participate in this study and wish to continue” option, you consent to participate in this study. If you have questions about your rights as a participant or are concerned with your treatment throughout the research process, please contact the NC State University IRB Director at IRB-Director@ncsu.edu, 919-515-8754.

Questions about the study: If you have questions about the study, you may contact Dr. Rajan Parajuli, Assistant Professor at North Carolina State University at 919-513-2579 or urban_forestry@ncsu.edu. *This study is being conducted in association with the following agencies and institutions:*

- ☐ Yes, I consent to participate in this study and wish to continue
- ☐ No, I do not consent to participate in this study and do not wish to continue

INSTRUCTIONS TO COMPLETE THE QUESTIONNAIRE

To choose a response, click on the button that corresponds to your answer. If you would like to change your answer, click on a different button. You may go back to earlier screens by clicking the ‘BACK’ button at the bottom of the screen. To advance to the next screen click the ‘NEXT’ button. If you start the questionnaire and are unable to finish it, you can pause your response by simply closing the browser window and then return to it later by clicking again on the link in the email we sent you. This will take you back to the next unanswered question. If there is a question you leave blank, you will be informed that it was left blank. You may then either return to answer that question or continue on to the next question. After the questionnaire has been completed you will not be able to re-enter the questionnaire.

We appreciate your time and effort in assisting us by completing this web-based questionnaire.

... continued

PUBLIC SECTOR SURVEY INSTRUMENT

The COVID-19 Pandemic of the past 18 months has disrupted many industries and organizations. Therefore, please answer these questions to the best of your ability based on your activities during 2019 prior to the pandemic.

Click next to begin the questionnaire. **NEXT →**

Q1

In this study, urban and community forestry is defined as all activities that support or care for the trees in your community's landscape (including producing, planting, maintaining, and removing trees).

Please, think back to the year 2019. In 2019, was your agency involved in urban and community forestry on publicly owned lands or rights-of-way?

☐ YES

☐ NO

END

This survey is meant for those agencies involved in urban and community forestry on publicly owned lands in 2019. Click "Next" button to end the survey.

We thank you for your time!

Q2

Please select the jurisdiction type that best represents your agency?

☐ COUNTY

☐ CITY

☐ TOWN

☐ BOROUGH

☐ PARISH

☐ OTHER (SPECIFY)

Q3

What is the approximate current population of the jurisdiction that your agency serves? Data needed to answer this question may be unavailable or accessible, but we ask that you provide your best estimate.

Q4

In which state is your agency located? **DROP DOWN LIST OF 13 STATES**

Q5

In 2019, how many employees (full, part-time and seasonal) from your agency, including managers and volunteers, were involved with any activities related to urban and community forest maintenance, management and planning? Please type zero for any employee type or percentage not applicable to your organization. **Full-time worker** - for a calendar month, employed on average at least 30 hours of service per week, or 130 hours of service per month. **Part-time worker** - employed less than 30 hours per week or less than 130 hours per month. **Temporary employee** - usually hired when other employees are absent (due, for example, to maternity or disability leave) and to fill a temporary vacancy when needed. These employed may be hired through an agency. **Seasonal employee** - hired when a firm needs extra help during certain seasons of the year, for example, during the Spring. Data needed to answer this question may be unavailable or accessible, but provide your best estimate.

PUBLIC SECTOR SURVEY INSTRUMENT

Q5

Total number of employees in your agency

<input type="text"/>	FULL-TIME	<input type="text"/>	PART-TIME	<input type="text"/>	TEMP
<input type="text"/>	SEASONAL	<input type="text"/>	VOLUNTEER		

Average percentage of their time ONLY on urban and community forestry-related activities (0-100%)

<input type="text"/>	FULL-TIME	<input type="text"/>	PART-TIME	<input type="text"/>	TEMP
<input type="text"/>	SEASONAL	<input type="text"/>	VOLUNTEER		

Q6

In the space below, please provide an estimate of your agency’s expenditures on urban and community forestry activities in 2019. In the left column, please estimate the salary and fringe benefits of your employees. In the right column, please estimate expenditures on equipment, supplies, and hiring of contractors. Data needed to answer this question may be unavailable or accessible, but provide your best estimate. If you cannot provide an estimate of expenditures, please leave all fields blank.

<input type="text"/>	SALARY AND FRINGE	OTHER EXPENDITURE	<input type="text"/>
		(EQUIP COST, CONTRACTUAL SERVICES)	

Q6A

In 2019, what were your agency’s approximate expenditures on personnel (wages plus fringe benefits) for all urban and community forestry activities?

<input type="radio"/> LESS THAN \$10,000	<input type="radio"/> \$500,000 TO \$999,999
<input type="radio"/> \$10,000 TO \$49,999	<input type="radio"/> \$1,000,000 TO \$2,499,999
<input type="radio"/> \$50,000 TO \$99,999	<input type="radio"/> \$2,500,000 TO \$4,999,999
<input type="radio"/> \$100,000 TO \$249,999	<input type="radio"/> \$5,000,000 TO 9,999,999
<input type="radio"/> \$250,000 TO 499,999	<input type="radio"/> \$10,000,000 OR MORE

Q6B

What percentage of your agency’s 2019 budget for urban and community forestry activities was contracted out to private businesses such as consultants, landscapers, and arborists? **Knowing this percentage will help us avoid double-counting the economic contributions of sub-contractors who also reply to this survey.* Data needed to answer this question may be unavailable or accessible, but we ask that you provide your best estimate. %

Q7

Does your jurisdiction operate an electric utility?

<input type="radio"/> YES	<input type="radio"/> NO
---------------------------	--------------------------

PUBLIC SECTOR SURVEY INSTRUMENT

Q7A

For your agency’s utility vegetation management program in 2019, what were your approximate expenditures on in-house personnel (salary and fringe benefits for both production and management personnel)? Data needed to answer this question may be unavailable or accessible, but provide your best estimate.

DOLLARS (\$) PLEASE SPECIFY NOT SURE ☐

Q7B

In 2019, including fringe, benefits, and management, which one of the following best describes the approximate personnel expenditures for your utility vegetation management program? We recognize data needed to answer this question may be unavailable or not reasonably accessible. In this event, we ask you provide your best possible estimate.

- ☐ LESS THAN \$10,000
- ☐ \$500,000 TO \$999,999
- ☐ \$10,000 TO \$49,999
- ☐ \$1,000,000 TO \$2,499,999
- ☐ \$50,000 TO \$99,999
- ☐ \$2,500,000 TO \$4,999,999
- ☐ \$100,000 TO \$249,999
- ☐ \$5,000,000 TO 9,999,999
- ☐ \$250,000 TO 499,999
- ☐ \$10,000,000 OR MORE

Q8

In 2019, did your agency generate revenue from selling wood waste and by-products generated from tree care activities (timber, firewood, chips, mulch)?

- ☐ YES
- ☐ NO

Q8A

In 2019, did your business generate revenue from selling wood waste and by-products generated from tree care activities (timber, firewood, chips, mulch)?

- Timber to sawmills or woodworkers

☐ YES

☐ NO
- Wood residues/chips to power generators

☐ YES

☐ NO
- Firewood

☐ YES

☐ NO
- Wood chips for mulch or compost

☐ YES

☐ NO
- Other (Specify)

PUBLIC SECTOR SURVEY INSTRUMENT

Q9

Listed below are potential challenges to success of agencies involved in urban and community forestry. Rate how significant each challenge is for your agency.

... Inadequate budget

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Inadequate state or local regulations

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Lack of political support

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Lack of coordination between departments

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Inadequate credentialing of workforce

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Lack of qualified personnel

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Personnel turnover

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Workforce diversity (less inclusive)

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Lack of qualified private-sector contractors

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Lack of public awareness or cooperation

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Lack of urban and community forest inventories and data

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Increasing extreme weather events and associated costs

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Other (Specify)

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... continued

PUBLIC SECTOR SURVEY INSTRUMENT

Q10

How has the COVID-19 Pandemic impacted your agency's ability to carry out urban and community forestry activities?

- ☐ VERY NEGATIVE ☐ SOMEWHAT NEGATIVE ☐ NEUTRAL
☐ SOMEWHAT POSITIVE ☐ EXTREMELY POSITIVE

Q11

How has the COVID-19 Pandemic impacted public demand for your agency's urban and community forestry activities and services?

- ☐ INCREASED SUBSTANTIALY ☐ INCREASED SLIGHTLY ☐ NO CHANGE
☐ DECREASED SUBSTANTIALY ☐ DECREASED SLIGHTLY

Q12

How has the COVID-19 Pandemic impacted the budget for your agency's urban and community forestry activities?

- ☐ INCREASED SUBSTANTIALY ☐ INCREASED SLIGHTLY ☐ NO CHANGE
☐ DECREASED SUBSTANTIALY ☐ DECREASED SLIGHTLY

Q13

Given the COVID-19 Pandemic, how would you describe the future outlook of your agency's urban and community forestry activities?

- ☐ VERY PESSIMISTIC ☐ SOMEWHAT PESSIMISTIC ☐ NEUTRAL
☐ SOMEWHAT OPTIMISTIC ☐ EXTREMELY OPTIMISTIC

Q14

Would you like to tell us more about the future outlook of urban and community forestry for your agency?

Q15

What is the zip code of your agency's primary address?

End of Survey You have reached the end of the questionnaire. To finalize and submit your response, click the "Next" arrow below.

NEXT →

To edit your response click the "Back" arrow below.

← BACK

When you are ready to submit your data, please click SUBMIT below.

SUBMIT

. . . continued

PUBLIC SECTOR SURVEY INSTRUMENT

Q16

What is the business owner’s education level?

- ☐ HIGH SCHOOL INCOMPLETE
- ☐ HIGH SCHOOL COMPLETE
- ☐ ASSOCIATE’S DEGREE
- ☐ BACHELOR’S DEGREE
- ☐ ADVANCED DEGREE (MASTERS OR PHD)
- ☐ DO NOT WISH TO SHARE

Q17

What is the business owner’s gender?

- ☐ MALE
- ☐ FEMALE
- ☐ NON-BINARY
- ☐ DO NOT WISH TO SHARE

Q18

What is the business owner’s race?.

- ☐ WHITE
- ☐ BLACK OR AFRICAN AMERICAN
- ☐ ASIAN
- ☐ HISPANIC, LATINO OR SPANISH
- ☐ INDIAN AMERICAN
- OTHER (SPECIFY)
- ☐ DO NOT WISH TO SHARE

Q19

Which one of the following best describes the organizational structure of your business?

- ☐ SOLE PROPRIETORSHIP
- ☐ CORPORATION
- ☐ LIMITED LIABILITY COMPANY OR LLC
- ☐ TRUST

OTHERS (SPECIFY)

Q20

What is the zip code of your business’s primary address?

End of Survey You have reached the end of the questionnaire. To finalize and submit your response, click the “Next” arrow below.

NEXT →

To edit your response click the “Back” arrow below.

← BACK

When you are ready to submit your data, please click SUBMIT below.

SUBMIT

STATE AGENCIES SURVEY INSTRUMENT

INTRODUCTION

This regional study, which aims to assess the economic contributions of urban and community forestry in the Southern United States, has been contracted by the southern states forestry agencies to North Carolina State University and several partner institutions. In this study, urban and community forestry (U&CF) is defined as all activities that support or care for the trees in cities, towns, suburbs, and other developed areas (including producing, planting, maintaining, and removing trees).

CONFIDENTIALITY AND CONSENT

We invite the person in your company most familiar with your business operations to complete this brief questionnaire, which will take about 5-10 minutes. Your participation in this study is voluntary. You may cease participation or exit the questionnaire at any time by simply closing your internet browser. All of your responses to this questionnaire are confidential and no personally identifying information will be recorded and published anywhere. Please note that there is not any direct compensation for participating in this survey. Information you share will be aggregated with other respondents for analysis and will not be reported in any way that may reveal your identity. By clicking the “Yes, I consent to participate in this study and wish to continue” option, you consent to participate in this study. If you have questions about your rights as a participant or are concerned with your treatment throughout the research process, please contact the NC State University IRB Director at IRB-Director@ncsu.edu, 919-515-8754.

Questions about the study: If you have questions about the study, you may contact Dr. Rajan Parajuli, Assistant Professor at North Carolina State University at 919-513-2579 or urban_forestry@ncsu.edu. *This study is being conducted in association with the following agencies and institutions:*

- ☐ Yes, I consent to participate in this study and wish to continue
- ☐ No, I do not consent to participate in this study and do not wish to continue

INSTRUCTIONS TO COMPLETE THE QUESTIONNAIRE

To choose a response, click on the button that corresponds to your answer. If you would like to change your answer, click on a different button. You may go back to earlier screens by clicking the ‘BACK’ button at the bottom of the screen. To advance to the next screen click the ‘NEXT’ button. If you start the questionnaire and are unable to finish it, you can pause your response by simply closing the browser window and then return to it later by clicking again on the link in the email we sent you. This will take you back to the next unanswered question. If there is a question you leave blank, you will be informed that it was left blank. You may then either return to answer that question or continue on to the next question. After the questionnaire has been completed you will not be able to re-enter the questionnaire.

We appreciate your time and effort in assisting us by completing this web-based questionnaire.

... continued

STATE AGENCIES SURVEY INSTRUMENT

The COVID-19 Pandemic of the past 18 months has disrupted many industries and organizations. Therefore, please answer these questions to the best of your ability based on your activities during 2019 prior to the pandemic.

Click next to begin the questionnaire. **NEXT →**

Q1

Which state does your agency serve? **DROP DOWN LIST OF 13 STATES**

Q2

In 2019, how many public employees (full, part-time, and seasonal) from your agency, including managers and volunteers, were involved with any activities related to urban and community forest maintenance, management and planning? Please type zero for any employee type or percentage not applicable to your organization.

Full-time worker - for a calendar month, employed on average at least 30 hours of service per week, or 130 hours of service per month.

Part-time worker - employed less than 30 hours per week or less than 130 hours per month.

Temporary employee - usually hired when other employees are absent (due, for example, to maternity or disability leave) and to fill a temporary vacancy when needed. These employees may be hired through an agency.

Seasonal employee - hired when a firm needs extra help during certain seasons of the year, for example, during the Spring.

Data needed to answer this question may be unavailable or accessible, but provide your best estimate.

Total number of employees in your agency

<input type="text"/>	FULL-TIME	<input type="text"/>	PART-TIME	<input type="text"/>	TEMP
<input type="text"/>	SEASONAL	<input type="text"/>	VOLUNTEER		

Average percentage of their time ONLY on urban and community forestry-related activities (0-100%)

<input type="text"/>	FULL-TIME	<input type="text"/>	PART-TIME	<input type="text"/>	TEMP
<input type="text"/>	SEASONAL	<input type="text"/>	VOLUNTEER		

Q3

In the space below, please provide an estimate of your agency's expenditures on urban and community forestry activities in 2019. In the left column, please estimate the salary and fringe benefits of your employees. In the right column, please estimate expenditures on equipment, supplies, and hiring of contractors. Data needed to answer this question may be unavailable or accessible, but provide your best estimate. If you cannot provide an estimate of expenditures, please leave all fields blank.

<input type="text"/>	SALARY AND FRINGE	OTHER EXPENDITURE	<input type="text"/>
		(EQUIP COST, CONTRACTUAL SERVICES)	

STATE AGENCIES SURVEY INSTRUMENT

Q3A

In 2019, what were your agency's approximate expenditures on personnel (wages plus fringe benefits) for all urban and community forestry activities?

- | | |
|--|--|
| <input type="radio"/> LESS THAN \$10,000 | <input type="radio"/> \$500,000 TO \$999,999 |
| <input type="radio"/> \$10,000 TO \$49,999 | <input type="radio"/> \$1,000,000 TO \$2,499,999 |
| <input type="radio"/> \$50,000 TO \$99,999 | <input type="radio"/> \$2,500,000 TO \$4,999,999 |
| <input type="radio"/> \$100,000 TO \$249,999 | <input type="radio"/> \$5,000,000 TO 9,999,999 |
| <input type="radio"/> \$250,000 TO 499,999 | <input type="radio"/> \$10,000,000 OR MORE |

Q3B

In 2019, what were your agency's approximate expenditures on supplies, equipment, and contractual services for all urban and community forestry activities?

- | | |
|--|--|
| <input type="radio"/> LESS THAN \$10,000 | <input type="radio"/> \$500,000 TO \$999,999 |
| <input type="radio"/> \$10,000 TO \$49,999 | <input type="radio"/> \$1,000,000 TO \$2,499,999 |
| <input type="radio"/> \$50,000 TO \$99,999 | <input type="radio"/> \$2,500,000 TO \$4,999,999 |
| <input type="radio"/> \$100,000 TO \$249,999 | <input type="radio"/> \$5,000,000 TO 9,999,999 |
| <input type="radio"/> \$250,000 TO 499,999 | <input type="radio"/> \$10,000,000 OR MORE |

Q4

Of your company's total operating budget for urban and community forestry activities in 2019, what percentage was sub-contracted to private businesses such as consultants, landscapers, and arborists? **Knowing this percentage will help us avoid double-counting the economic contributions of sub-contractors who also reply to this survey.* Data needed to answer this question may be unavailable or accessible, but we ask that you provide your best estimate. %

Q5

Listed below are potential challenges to success of agencies involved in urban and community forestry. Rate how significant each challenge is for your agency.

. . . Inadequate budget

- ☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

. . . Inadequate state or local regulations

- ☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

. . . Lack of leadership support

- ☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

. . . Lack of coordination between departments

- ☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

. . . continued

STATE AGENCIES SURVEY INSTRUMENT

... Inadequate credentialing of workforce

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Lack of qualified personnel

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Personnel turnover

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Workforce diversity

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Lack of qualified private-sector contractors

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Lack of public awareness or cooperation

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Lack of urban and community forest inventories and data

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Other (specify)

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

Q6

How has the COVID-19 Pandemic impacted your agency's ability to carry out urban and community forestry activities?

☐ VERY NEGATIVE ☐ SOMEWHAT NEGATIVE ☐ NEUTRAL
☐ SOMEWHAT POSITIVE ☐ EXTREMELY POSITIVE

Q7

How has the COVID-19 Pandemic impacted public demand for your agency's urban and community forestry activities and services?

☐ INCREASED SUBSTANTIALY ☐ INCREASED SLIGHTLY ☐ NO CHANGE
☐ DECREASED SUBSTANTIALY ☐ DECREASED SLIGHTLY

Q8

How has the COVID-19 Pandemic impacted the budget for your agency's urban and community forestry activities?

☐ INCREASED SUBSTANTIALY ☐ INCREASED SLIGHTLY ☐ NO CHANGE
☐ DECREASED SUBSTANTIALY ☐ DECREASED SLIGHTLY

STATE AGENCIES SURVEY INSTRUMENT

Q9

Given the COVID-19 Pandemic, how would you describe the future outlook for your agency's urban and community forestry activities?

- ☐ VERY PESSIMISTIC ☐ SOMEWHAT PESSIMISTIC ☐ NEUTRAL
☐ SOMEWHAT OPTIMISTIC ☐ EXTREMELY OPTIMISTIC

Q10

Would you like to tell us more about the future outlook of urban and community forestry for your agency?

Q11

What is the zip code of your agency's primary address?

End of Survey You have reached the end of the questionnaire. To finalize and submit your response, click the "Next" arrow below.

NEXT →

To edit your response click the "Back" arrow below.

← BACK

When you are ready to submit your data, please click **SUBMIT** below.

SUBMIT

HIGHER EDUCATION INSTITUTIONS SURVEY INSTRUMENT

INTRODUCTION

This regional study, which aims to assess the economic contributions of urban and community forestry in the Southern United States, has been contracted by the southern states forestry agencies to North Carolina State University and several partner institutions. In this study, urban and community forestry (U&CF) is defined as all activities that support or care for the trees in cities, towns, suburbs, and other developed areas (including producing, planting, maintaining, and removing trees).

CONFIDENTIALITY AND CONSENT

We invite the person in your company most familiar with your business operations to complete this brief questionnaire, which will take about 5-10 minutes. Your participation in this study is voluntary. You may cease participation or exit the questionnaire at any time by simply closing your internet browser. All of your responses to this questionnaire are confidential and no personally identifying information will be recorded and published anywhere. Please note that there is not any direct compensation for participating in this survey. Information you share will be aggregated with other respondents for analysis and will not be reported in any way that may reveal your identity. By clicking the “Yes, I consent to participate in this study and wish to continue” option, you consent to participate in this study. If you have questions about your rights as a participant or are concerned with your treatment throughout the research process, please contact the NC State University IRB Director at IRB-Director@ncsu.edu, 919-515-8754.

Questions about the study: If you have questions about the study, you may contact Dr. Rajan Parajuli, Assistant Professor at North Carolina State University at 919-513-2579 or urban_forestry@ncsu.edu. *This study is being conducted in association with the following agencies and institutions:*

- ☐ Yes, I consent to participate in this study and wish to continue
- ☐ No, I do not consent to participate in this study and do not wish to continue

INSTRUCTIONS TO COMPLETE THE QUESTIONNAIRE

To choose a response, click on the button that corresponds to your answer. If you would like to change your answer, click on a different button. You may go back to earlier screens by clicking the ‘BACK ‘ button at the bottom of the screen. To advance to the next screen click the ‘NEXT’ button. If you start the questionnaire and are unable to finish it, you can pause your response by simply closing the browser window and then return to it later by clicking again on the link in the email we sent you. This will take you back to the next unanswered question. If there is a question you leave blank, you will be informed that it was left blank. You may then either return to answer that question or continue on to the next question. After the questionnaire has been completed you will not be able to re-enter the questionnaire.

We appreciate your time and effort in assisting us by completing this web-based questionnaire.

... continued

HIGHER EDUCATION INSTITUTIONS SURVEY INSTRUMENT

Click next to begin the questionnaire. **NEXT →**

Q1

In this study, urban and community forestry is defined as all activities that support or care for the trees in cities, towns, suburbs, and other developed areas (including producing, maintaining, and removing trees). Please think back to the year 2019. In 2019, was your institution involved in urban and community forestry activities on campus property?

☐ YES ☐ NO

END

*This survey is meant for those agencies involved in urban and community forestry on publicly owned lands in 2019. Click “Next” button to end the survey.
We thank you for your time!*

Q2

Currently, what is the approximate student population of your institution? We recognize data needed to answer this question may be unavailable or not reasonably accessible. In this event, we ask you provide your best possible estimate.

Q3

In which state is your institution located? **DROP DOWN LIST OF 13 STATES**

The COVID-19 Pandemic of the past 18 months has disrupted many industries and organizations. Therefore, please answer these questions to the best of your ability based on your activities during 2019 prior to the pandemic.

Q4

In 2019, how many employees (full, part-time, and seasonal) at your institution were directly involved in any activities related to urban and community forestry (tree planting, maintenance, and management)? Please type zero for any employee type or percentage not applicable to your institution. **Full-time worker** - for a calendar month, employed on average at least 30 hours of service per week, or 130 hours of service per month. **Part-time worker** - employed less than 30 hours per week or less than 130 hours per month. **Temporary employee** - usually hired when other employees are absent (due, for example, to maternity or disability leave) and to fill a temporary vacancy when needed. These employed may be hired through an agency. **Seasonal employee** - hired when a firm needs extra help during certain seasons of the year, for example, during the Spring. Data needed to answer this question may be unavailable or accessible, but provide your best estimate.

Total number of employees in your institution involved in urban and community forestry

FULL-TIME PART-TIME TEMP
 SEASONAL VOLUNTEER

Average percentage of their time ONLY on urban and community forestry-related activities (0-100%)

FULL-TIME PART-TIME TEMP
 SEASONAL VOLUNTEER

HIGHER EDUCATION INSTITUTIONS SURVEY INSTRUMENT

Q5

In the space below, please provide an estimate of your agency’s expenditures on urban and community forestry activities in 2019. In the left column, please estimate the salary and fringe benefits of your employees. In the right column, please estimate expenditures on equipment, supplies, and hiring of contractors. Data needed to answer this question may be unavailable or accessible, but provide your best estimate. If you cannot provide an estimate of expenditures, please leave all fields blank.

<input type="text"/>	SALARY AND FRINGE	OTHER EXPENDITURE	<input type="text"/>
		(EQUIP COST, CONTRACTUAL SERVICES)	

Q5A

In 2019, what were your institution’s approximate expenditures on personnel (wages plus fringe benefits) for all urban and community forestry activities? We recognize data needed to answer this question may be unavailable or not reasonably accessible. In this event, please provide your best possible estimate.

- | | |
|--|--|
| <input type="radio"/> LESS THAN \$10,000 | <input type="radio"/> \$500,000 TO \$999,999 |
| <input type="radio"/> \$10,000 TO \$49,999 | <input type="radio"/> \$1,000,000 TO \$2,499,999 |
| <input type="radio"/> \$50,000 TO \$99,999 | <input type="radio"/> \$2,500,000 TO \$4,999,999 |
| <input type="radio"/> \$100,000 TO \$249,999 | <input type="radio"/> \$5,000,000 TO 9,999,999 |
| <input type="radio"/> \$250,000 TO 499,999 | <input type="radio"/> \$10,000,000 OR MORE |

Q5B

In 2019, what were your institution’s approximate expenditures on supplies, equipment, and contractual services for all urban and community forestry activities? We recognize data needed to answer this question may be unavailable or not reasonably accessible. In this event, we ask you provide your best possible estimate.

- | | |
|--|--|
| <input type="radio"/> LESS THAN \$10,000 | <input type="radio"/> \$500,000 TO \$999,999 |
| <input type="radio"/> \$10,000 TO \$49,999 | <input type="radio"/> \$1,000,000 TO \$2,499,999 |
| <input type="radio"/> \$50,000 TO \$99,999 | <input type="radio"/> \$2,500,000 TO \$4,999,999 |
| <input type="radio"/> \$100,000 TO \$249,999 | <input type="radio"/> \$5,000,000 TO 9,999,999 |
| <input type="radio"/> \$250,000 TO 499,999 | <input type="radio"/> \$10,000,000 OR MORE |

Q6

What percentage of your institution’s 2019 budget for urban and community forestry activities was contracted out to private businesses such as consultants, landscapers, and arborists *Knowing this percentage will help us avoid double-counting the economic contributions of sub-contractors who also reply to this survey. Data needed to answer this question may be unavailable or accessible, but we ask that you provide your best estimate. %

HIGHER EDUCATION INSTITUTIONS SURVEY INSTRUMENT

Q7

Listed below are potential challenges to success of higher education institutions managing urban and community forests. Rate how significant each challenge is for your institution.

... Inadequate budget

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Inadequate state or local regulations

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Lack of leadership support

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Lack of coordination between departments

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Inadequate credentialing of workforce

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Lack of qualified personnel

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Personnel turnover

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Workforce diversity

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Lack of qualified private-sector contractors

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Lack of public awareness or cooperation

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Lack of urban and community forest inventories and data

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

... Other (specify)

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

Q8

How has the COVID-19 Pandemic impacted your institution's ability to carry out urban and community forestry activities?

☐ VERY NEGATIVE ☐ SOMEWHAT NEGATIVE ☐ NEUTRAL

☐ SOMEWHAT POSITIVE ☐ VERY POSITIVE

... continued

HIGHER EDUCATION INSTITUTIONS SURVEY INSTRUMENT

Q9

Given the COVID-19 Pandemic, how would you describe the future outlook for your institution's urban and community forestry activities?

- ☐ VERY PESSIMISTIC ☐ SOMEWHAT PESSIMISTIC ☐ NEUTRAL
☐ SOMEWHAT OPTIMISTIC ☐ EXTREMELY OPTIMISTIC

Q10

Would you like to tell us more about the future outlook of urban and community forestry for your institution?

Q11

Would you like to tell us more about the future outlook of urban and community forestry for your institution?

Q12

What is the zip code of your institution's primary address?

End of Survey You have reached the end of the questionnaire. To finalize and submit your response, click the "Next" arrow below.

NEXT →

To edit your response click the "Back" arrow below.

← BACK

When you are ready to submit your data, please click SUBMIT below.

SUBMIT

NON-PROFIT ORGANIZATIONS SURVEY INSTRUMENT

INTRODUCTION

This regional study, which aims to assess the economic contributions of urban and community forestry in the Southern United States, has been contracted by the southern states forestry agencies to North Carolina State University and several partner institutions. In this study, urban and community forestry (U&CF) is defined as all activities that support or care for the trees in cities, towns, suburbs, and other developed areas (including producing, planting, maintaining, and removing trees).

CONFIDENTIALITY AND CONSENT

We invite the person in your company most familiar with your business operations to complete this brief questionnaire, which will take about 5-10 minutes. Your participation in this study is voluntary. You may cease participation or exit the questionnaire at any time by simply closing your internet browser. All of your responses to this questionnaire are confidential and no personally identifying information will be recorded and published anywhere. Please note that there is not any direct compensation for participating in this survey. Information you share will be aggregated with other respondents for analysis and will not be reported in any way that may reveal your identity. By clicking the “Yes, I consent to participate in this study and wish to continue” option, you consent to participate in this study. If you have questions about your rights as a participant or are concerned with your treatment throughout the research process, please contact the NC State University IRB Director at IRB-Director@ncsu.edu, 919-515-8754.

Questions about the study: If you have questions about the study, you may contact Dr. Rajan Parajuli, Assistant Professor at North Carolina State University at 919-513-2579 or urban_forestry@ncsu.edu. *This study is being conducted in association with the following agencies and institutions:*

- ☐ Yes, I consent to participate in this study and wish to continue
- ☐ No, I do not consent to participate in this study and do not wish to continue

INSTRUCTIONS TO COMPLETE THE QUESTIONNAIRE

To choose a response, click on the button that corresponds to your answer. If you would like to change your answer, click on a different button. You may go back to earlier screens by clicking the ‘BACK’ button at the bottom of the screen. To advance to the next screen click the ‘NEXT’ button. If you start the questionnaire and are unable to finish it, you can pause your response by simply closing the browser window and then return to it later by clicking again on the link in the email we sent you. This will take you back to the next unanswered question. If there is a question you leave blank, you will be informed that it was left blank. You may then either return to answer that question or continue on to the next question. After the questionnaire has been completed you will not be able to re-enter the questionnaire.

We appreciate your time and effort in assisting us by completing this web-based questionnaire.

... continued

NON-PROFIT ORGANIZATIONS SURVEY INSTRUMENT

The COVID-19 Pandemic of the past 18 months has disrupted many industries and organizations. Therefore, please answer these questions to the best of your ability based on your activities during 2019 prior to the pandemic.

Click next to begin the questionnaire. **NEXT →**

Q1

This is a study focusing on the Southern United States, which includes the following 13 states: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas and Virginia. Please think back to the year 2019. In 2019, was your organization active in any of these states?

☐ YES

☐ NO

END

This survey is meant for organizations operating in any of the 13 southern states listed above. If your organization was not active in these states, please click the “Next” button to end the survey. If your organization was active in these states, please click the “Back” button to change your answer and continue the survey. We thank you for your time!

Q2

In 2019, in which Southern state did your organization conduct the majority of its work?

DROP DOWN LIST OF 13 STATES

Q3

In 2019, in which of the following business activities was your organization engaged?

. . . landscape or tree care services?

YES ☐ NO ☐

E.g., tree planting, pruning, removal, trimming, landscape care and maintenance, ornamental tree and shrub maintenance, plant appraisal, overhead utility line and rights-of-way maintenance..

. . . nursery, greenhouse, and tree production?

YES ☐ NO ☐

E.g., nurseries with tree production for urban and community forestry.

. . . urban forestry consulting services?

YES ☐ NO ☐

E.g., foresters working in urban and community forest management such as conducting inventories and writing management plans and ordinances.

. . . landscape architectural and design services?

YES ☐ NO ☐

E.g., land use and city planning services, urban planning services, parks and other recreational areas planning services.

. . . other similar services? Please specify

NON-PROFIT ORGANIZATIONS SURVEY INSTRUMENT

Q3A

This question asks you to break down your organization’s 2019 revenue and expenditures across your urban and community forestry activities. Please enter a percentage for each activity so that all activities sum to 100%. We recognize data needed to answer this question may be unavailable or not reasonably accessible. In this event, we ask you provide your best possible estimate.

In 2019, what percentage of total activities did you have from ...

... landscape or tree care services?	<input type="text"/>	%
... nursery, greenhouse, and tree production?	<input type="text"/>	%
... urban and community forestry consulting services?	<input type="text"/>	%
... landscape architectural and design services?	<input type="text"/>	%
... other similar services? (Specify)	<input type="text"/>	%
TOTAL		100%

Q4

Did your organization generate revenues from selling wood waste and by-products generated from tree care activities (timber, firewood, chips, mulch)?

Timber to sawmills or woodworkers	<input type="radio"/> YES	<input type="radio"/> NO
Wood residues/chips to power generators	<input type="radio"/> YES	<input type="radio"/> NO
Firewood	<input type="radio"/> YES	<input type="radio"/> NO
Wood chips for mulch or compost	<input type="radio"/> YES	<input type="radio"/> NO
Other (Specify)	<input type="text"/>	

Q5

In 2019, what was your operating budget from all sources of funding? Data may be unavailable or accessible, but please provide your best estimate.

<input type="radio"/> LESS THAN \$10,000	<input type="radio"/> \$500,000 TO \$999,999
<input type="radio"/> \$10,000 TO \$49,999	<input type="radio"/> \$1,000,000 TO \$2,499,999
<input type="radio"/> \$50,000 TO \$99,999	<input type="radio"/> \$2,500,000 TO \$4,999,999
<input type="radio"/> \$100,000 TO \$249,999	<input type="radio"/> \$5,000,000 TO 9,999,999
<input type="radio"/> \$250,000 TO 499,999	<input type="radio"/> \$10,000,000 OR MORE
	<input type="radio"/> PREFER NOT TO DISCLOSE

NON-PROFIT ORGANIZATIONS SURVEY INSTRUMENT

Q6

In this study, urban and community forestry is defined as all activities that support or care for the trees in cities, towns, suburbs, and other developed areas (including producing, planting, maintaining, and removing trees). In 2019, in Q2, where your organization conducted the majority of its work, what percent of expenditures by your organization were for urban and community forestry-related activities? Data needed to answer this question may be unavailable or accessible, but provide your best estimate.

PERCENT OF ANNUAL BUDGET EXPENDITURES (0-100)
NOT SURE

Q6A

If you are not sure of the exact percentage of urban and community forestry-related expenditures your organization had in 2019 in Q2 could you estimate the range?

- | | |
|----------------------------------|----------------------------------|
| <input type="radio"/> 0 TO 9% | <input type="radio"/> 50% TO 59% |
| <input type="radio"/> 10% TO 19% | <input type="radio"/> 60% TO 69% |
| <input type="radio"/> 20% TO 29% | <input type="radio"/> 70% TO 79% |
| <input type="radio"/> 30% TO 39% | <input type="radio"/> 80% TO 89% |
| <input type="radio"/> 40% TO 49% | <input type="radio"/> 90% TO 99% |
| | <input type="radio"/> 100% |

Q7

In 2019, how many people did your organization in employ in the following categories (Please provide their approximate percentage of time (on average) spent on urban and community forestry related activities)? Please type zero for any employee type or percentage not applicable to your organization. **Full-time worker** - for a calendar month, employed on average at least 30 hours of service per week, or 130 hours of service per month. **Part-time worker** - employed less than 30 hours per week or less than 130 hours per month. **Temporary employee** - usually hired when other employees are absent (due, for example, to maternity or disability leave) and to fill a temporary vacancy when needed. These employed may be hired through an agency. **Seasonal employee** - hired when a firm needs extra help during certain seasons of the year, for example, during the Spring. Data needed to answer this question may be unavailable or accessible, but provide your best estimate.

Number of employees

<input type="text"/>	FULL-TIME	<input type="text"/>	PART-TIME	<input type="text"/>	TEMP
<input type="text"/>	SEASONAL	<input type="text"/>	VOLUNTEERS		

Average percentage of time on urban and community forestry-related activities (0-100%) (2)?

<input type="text"/>	FULL-TIME	<input type="text"/>	PART-TIME	<input type="text"/>	TEMP
<input type="text"/>	SEASONAL	<input type="text"/>	VOLUNTEERS		

... continued

NON-PROFIT ORGANIZATIONS SURVEY INSTRUMENT

Q8

In what year was your organization established?

Q9

Listed below are potential challenges to success of organizations involved in urban and community forestry. Rate how significant each challenge is for your organization.

. . . Inadequate budget

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

. . . Inadequate state or local regulations

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

. . . Lack of political support

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

. . . Lack of qualified personnel

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

. . . Personnel turnover

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

. . . Workplace diversity

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

. . . Lack of local government cooperation

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

. . . Lack of private-sector cooperation

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

. . . Lack of public awareness or cooperation

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

. . . Lack of urban and community forest inventories and data

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

. . . Other (specify)

☐ NOT AT ALL ☐ SLIGHTLY ☐ MODERATELY ☐ VERY ☐ EXTREMELY

NON-PROFIT ORGANIZATIONS SURVEY INSTRUMENT

Q10

How has the COVID-19 Pandemic impacted your organization's ability to carry out urban and community forestry activities?

- ☐ VERY NEGATIVE ☐ SOMEWHAT NEGATIVE ☐ NEUTRAL
☐ SOMEWHAT POSITIVE ☐ EXTREMELY POSITIVE

Q11

How has the COVID-19 Pandemic impacted public demand for your organization's urban and community forestry activities.

- ☐ INCREASED SUBSTANTIALY ☐ INCREASED SLIGHTLY ☐ NO CHANGE
☐ DECREASED SUBSTANTIALY ☐ DECREASED SLIGHTLY

Q12

Given the COVID-19 Pandemic, how would you describe the future outlook for your organization's urban and community forestry activities?

- ☐ VERY PESSIMISTIC ☐ SOMEWHAT PESSIMISTIC ☐ NEUTRAL
☐ SOMEWHAT OPTIMISTIC ☐ EXTREMELY OPTIMISTIC

Q13

Would you like to tell us more about the future outlook of urban and community forestry for your organization?

Q14

What is the zip code of your organization's primary address?

End of Survey You have reached the end of the questionnaire. To finalize and submit your response, click the "Next" arrow below.

NEXT →

To edit your response click the "Back" arrow below.

← BACK

When you are ready to submit your data, please click SUBMIT below.

SUBMIT



"This institution is an equal opportunity provider."



U.S. FOREST SERVICE NONDISCRIMINATION STATEMENT

In accordance with Federal law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, this institution is prohibited from discriminating on the basis of race, color, national origin, sex, age, disability, and reprisal or retaliation for prior civil rights activity (Not all prohibited bases apply to all programs).

Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotape, American Sign Language, etc.) should contact the responsible State or local Agency that administers the program or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information is also available in languages other than English.

To file a complaint alleging discrimination, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at http://www.ascr.usda.gov/complaint_filing_cust.html, or at any USDA office or write a letter addressed to USDA and provided in the letter all of the information requested in the form.

To request a copy of the complaint form, call (866) 632-9992 or submit the completed form/letter to USDA

MAIL

U.S. Department of Agriculture
Office of the Assistant Secretary for Civil Rights
1400 Independence Avenue, SW
Washington, D.C. 20250- 9410

FAX

(202) 690-7442

EMAIL:

program.intake@usda.gov.