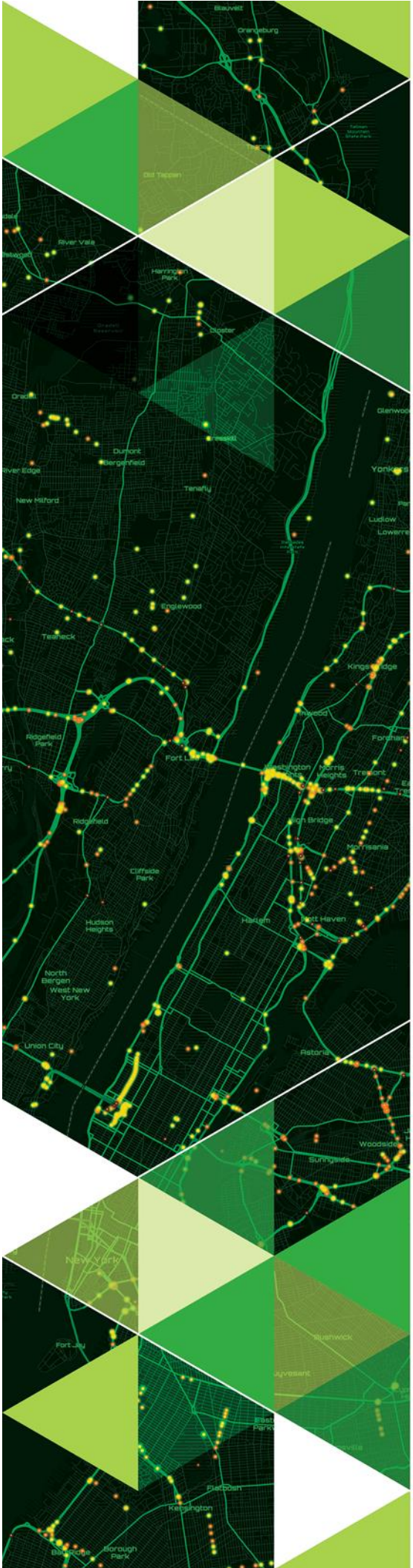

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TECHNICAL PAPER

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Methodology Statement: 2020 Esri Daytime Population

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Methodology Statement: 2020 Esri Daytime Population

Introduction

Knowing an area's demographic landscape is essential in the decision-making process for many public and private entities. Whether it is a retailer searching for the most profitable location for expansion or first responders mapping vulnerable populations for disaster preparations, utilizing a complete demographic profile is an essential decision-making input. Along with our comprehensive data catalog describing resident populations, Esri's 2020 daytime population data adds clarity when the day part is a significant consideration in an analysis.

Data Sources and Model

A trade area can contain very distinct day and night demographic profiles. Populated areas can be residential, commercial, industrial, administrative, or some combination of each. Vibrant city centers can contain substantially larger numbers of people during the typical workday than during evening hours. Esri's daytime population model provides invaluable insight into an area's daily population expansions and contractions.

The estimates are generated using a mix of inputs from Esri's US Updated Demographics, the decennial census, American Community Survey (ACS), and business data from Infogroup. Moreover, the modeling process incorporates the important methodological distinction between workers and persons employed. The former represents persons working throughout the workday, while the latter also includes persons employed but absent from work for various reasons such as illness, personal business, or vacation.

Furthermore, the model fittingly accounts for the distinct populations in group quarters. The nonmarketable, incarcerated adult population is considered out of scope and excluded from the estimates. The group quarters population in military installations is reconciled with the more broadly defined armed forces population that can cover personnel living off base as well.

The workday population is disaggregated into two primary groups: workers and residents.[1] The former is estimated using the geographic worker flow data from ACS and employment distributions from Infogroup to establish place-of-residence and

[1] It is important to note the differences in definition between Esri's daytime estimates of workers and residents with respect to our current-year, resident-based estimates of total employment and total population. The latter two variables are a tabulation of persons based on where they live. The daytime estimates are not. Daytime workers cover persons who not only live and work in the same area but also those who work in the area but live elsewhere (i.e., commuters). Armed forces personnel, living on and off base, are also classified as workers. Moreover, those employed but not at work are classified as a daytime resident. Daytime residents also include the population under 16 years of age and working-age persons who are unemployed or not in the labor force (i.e., retirees; homemakers; college students; and miscellaneous noninstitutional and institutional group quarters populations in nursing homes, juvenile detention centers, homeless shelters, etc.).

place-of-work linkages. The end result is an estimate of the total daytime population covering both residents and workers that can be leveraged for a more detailed and complete demographic analysis for any neighborhood in the United States.

COVID-19 Adjustments

The numerous mandated state lockdowns to stop the spread of coronavirus disease 2019 (COVID-19) had a profound effect on the typical diaspora of population flows throughout the day. Millions of workers within "nonessential" industries were dismissed or furloughed because of mandated business closures. Millions more were forced to work from home to comply with social distancing restrictions. The daytime population models were partially adjusted in an attempt to represent a modified daytime profile as of Esri's July 1, 2020, reference day.

The models incorporate Esri's pandemic-adjusted labor force characteristics that reflect place of residence estimates. Research from the University of Chicago provided the foundational framework to generate targeted estimates for the millions of people required to work from home.[2] Occupation-based employment-weighted rates were estimated leveraging the researcher's "teleworkable" occupation list along with input data from the Bureau of Labor Statistics' Occupational Employment Statistics program.

For more information about business data, call 1-800-447-9778.

Esri's Data Development Team

Led by chief demographer Kyle R. Cassal, Esri's data development team has a 35-year history of excellence in market intelligence. The team's economists, statisticians, demographers, geographers, and analysts produce independent small-area demographic and socioeconomic estimates and forecasts for the United States. The team develops exclusive demographic models and methodologies to create market-proven datasets, many of which are now industry benchmarks such as Tapestry™ Segmentation, Consumer Spending, Market Potential, and annual Updated Demographics. Esri® demographics powers ArcGIS® through dynamic web maps, data enrichment, reports, and infographics.

[2] https://bfi.uchicago.edu/wp-content/uploads/BFI_White-Paper_Dingel_Neiman_3.2020.pdf

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