# **SE Data Development**

## **Location:**

M:\Models\StateWide\TSM\_NextGen\900 CAD GIS Modeling\940 Modeling\working\_dir\SE\_Data\version\_v3.5\_Development

* SE\_from\_Census\_DB\DU\_data
* SE\_from\_Census\_DB\ emp\_data
* Processing\<college, school, beach, stateparks, hotel data files>

## **Data sources:**

* 1. Census 2020: Block data – DU, HH, Pop, GQ, Child
  2. FL Parcel Data – 2022
  3. BEBR – 2022 (Volume 56, Bulletin 195, release April 2023)
  4. Dan & Bradstreet – 2020 - Point data
  5. BEA 2021, Woods & Poole – 2022 (SP\_2022\_FL)

## **Process:**

* 1. **Zone System**:

A new TSM zone system was developed incorporating all 25,000 Regional Models’ (REG) zones. This allows to maintain data at the regional model system level (TAZ, not MAZ) while NextGen model uses aggregated regional model at TSM-zone level.

* 1. **Population & Households**:

The Census blocks (480k blocks in FL) were tagged with TSM and Regional Models’ (REG) TAZ ids and processed to get 2020 Housing Units (DU), Households (HH), population (POP), Group Quarter (GQ) population (both Intuitional and non-Intuitional) and households with Children (Child). The data is aggregate to regional model zones. Housing occupancy rates (Ratio of housing units to households) and average household size (ratio of population to households) were derived.

All the parcels in Florida, about 10.8 million from parcel data released in 2023 (with end of year 2022 property appraisals) was geo tagged with TSM and REG zonal ids. The new parcels that were developed into residential (single family units, multi-family units and mobile homes) between 2020 to 2022 were filtered out and the number of land-units were counted at the REG zone level. These were classified as newly developed housing units past Census 2020 count. The new households (2020 – 2022) and their population was developed by applying Census 2020 derived Housing occupancy rates and average household size.

The county level estimates from the latest BEBR, Volume 56, Bulletin 195 (released in April 2023) was used in scaling the population at the REG zonal. Once scaled and matched at the county level (after addressing for rounding / reallocating to zones) the new scaled households were derived, again by applying average household size. This is now considered 2022 BEBR scaled households and population data at the REG zone level.

* 1. **Employment Data:**

Dan and Bradstreet data from 2020 was geocoded with REG and TSM id and then a two-digit NAICS code as extracted. The data was aggregated to 22 employment categories (see NAICS codes table below) at REG zone level. However, the total employment data is 13% less than 2020 BEA data (10.5 vs 12.1 million jobs). This maybe due to the discrepancies between jobs versus employees data types since Dan & Bradstreet data reports number of employees working at a location while BEA / W&P report number of jobs? Since BEA/ W&P is going to be used as control total for future year data, the base employment is scaled to match to the same (12.1 million). While both BEA/W&P data consist of NAICS codes, these were not used since there is a larger discrepancy between D&B data and BEA at the county level.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| No | NAICS | LD Model | SD Model | Parcel Data (DOR\_UC) Use Codes | Employment Category | SE data <fieldName> |
| 1 | 11 | Agriculture | Agriculture | 050, 051, 052, 053, 054, 055, 056, 057, 058, 059, 060, 061, 062, 063, 064, 065, 066, 067, 068, 069, 082 | Industrial | agricemp |
| 2 | 21 | Mining | Industry | 047, 092 | Industrial | mininemp |
| 3 | 22 | Utility | Transportation, Communications, Utilities | 020, 042, 026 | Industrial | utiliemp |
| 4 | 23 | Construction | Construction | 042, 043, 049 | Industrial | constemp |
| 5 | 31-33 | Manufacturing | Industry | 040, 041, 042, 044, 045, 046 | Industrial | manufemp |
| 6 | 42 | Wholesale Trade | Industrial | 029 | Warehouse | wholeemp |
| 7 | 44-45 | Retail Trade | Retail | 010, 011, 012, 013, 014, 015, 016, 021, 022, 030 | Retail | retaiemp |
| 8 | 48-49 | Transportation and Warehousing | Transportation, Communications, Utilities | 048 | Warehouse | transemp |
| 9 | 51 | Information Services | Service | 017, 018 | Office | inforemp |
| 10 | 52 | Financial Services | Financial, real estate, insurance |  |  | finanemp |
| 11 | 53 | Real Estate Service | Financial, real estate, insurance | 023, 024 | Office | realeemp |
| 12 | 54 | Professional Services | Service |  |  | profeemp |
| 13 | 55 | Managerial | Service | 019 | Office | managemp |
| 14 | 56 | Administrative | Service |  |  | adminemp |
| 15 | 61 | Education | Service | 072, 083, 084 | School | educaemp |
| 16 | 62 | Medical | Service | 073, 074, 085 | Hospital | medicemp |
| 17 | 71 | Entertainment | Service | 031, 032, 033, 034, 035, 037, 038 | Office | enteremp |
| 18 | 72 | Accommodation | Hotel | 039 | Hotel | accomemp |
| 19 | 81 | Other Service | Service | 025, 027, 071, 075, 076, 077, 078, 079 | Office | oservemp |
| 20 | 92 | Public Administration | Government | 088 | Office | pubademp |
| 21 | 928110 | Federal Government | Government | 081 | Office | federemp |
| 22 | 921190 | State Government | Government | 086,087 | Office | stateemp |

Using parcel data all the land units that were developed between 2020 and 2022 were classified into employment categories using department of revenue use code (DOR\_UC). See above table for the codes. The number of employees per livable square footage (see table below) was applied to generate new employees at these parcels. The data is aggregated to REG zone level and one of the 22 employment categories were then assigned to each parcel based on their DOR\_UC. This new data was appended data 2020 scaled employment by category. The 2022 employment data is once again scaled to match W&P 2022 estimate (BEA last release in Nov 2022 reflects only 2021 data).

|  |  |  |  |
| --- | --- | --- | --- |
| **Description/Land Use** | **Unit** | **Rate** | **LandUse** |
| Hospital | 1,000 sq.ft. | 3 employees | Hospital |
| Hotel | 1 room | 0.9 employees | Hotels |
| Industrial | 1,000 sq. ft. | 2 employees | Industrial |
| LargeRetail | 1,000 sq. ft. | 2 employees | LargeRetail |
| Manufacturing | 1,000 sq.ft. | 1.8 employees | Manufacturing |
| Office | 1,000 sq. ft. | 4 employees | Office |
| Restaurant | 1,000 sq. ft. | 5 employees | Restaurant |
| Commercial | 1,000 sq. ft. | 3 employees | Commercial |
| School | 1,000 sq. ft. | 0.8 employees | School |
| Warehouse | 1,000 sq. ft. | 1 employees | Warehouse |

* 1. **School Enrollment Data:**

School enrollment data for both private and public schools was gathered from Florida department of education (FLDOE) for 2022 and is geocoded with REG and TSM ids. This data also includes number of teachers at the schools. This data was used to cross check and update education employment category at the REG zone level.

* 1. **College Enrollment Data:** The college enrollment data was originally developed in 2019 and is used as is here in 2022. The college data (point data layer) is a geocoded with REG and TSM ids and is available for review / update to 2022. However, in the interest of time, this data is not updated.
  2. **Parking at State Parks and Beaches:** Since public places such as beaches and state parks don’t contain employment it is important to reflect their attractiveness in the trip distribution models (destination choice models). Thus, parking is used as a surrogate to employment. The data was first obtained from Department of Eniv. Protection (geodata.dep.state.fl.us/datasets ) then geocoded with REG and TSM ids. The data with parking spaces is aggregated to REG zones.

All five data sets (population/HH, employment, school enrollment, college enrollment and parking at public beaches and parks) were appended together to form 2022 land-use data.

Furthermore, households are subcategorized based on SIZE, HEAD\_AGE, INCOME and WORKER categories while persons are categorized into AGE, MALE/FEMALE, Type of work based on 2017 ACS data. The latest available data is 5 year ACS 2021 and Decennial Census 2020 with this detail would be released sometime in Nov 2023.

## **Files**

* Summaries of demography <DU/HU/POP> employment data can be found in **TSM\_Census2020\_ParcelNew22\_BEBR\_Scaled.xlsx**
* See “**2022\_Users\_Guide\_Quick\_Reference\_TSM\_Categories.xlsx** “ for employment categories to NAICS Code references to BEA/W&P/ParcelData
* TSM\_mpo\_data\_2022\_hotel\_sch\_beach\_state\_parking.gpkg contains all the information.

## **Scripts**

* Compute\_DU\_from\_ParcelData.R
* Compute\_EMP\_From\_DB\_Scale\_to\_WP.R
* Compute\_SE\_Data\_from\_Parcels.R
* school\_enrollment\_data.R