



Broward Metropolitan Planning Organization Commitment 2045 Metropolitan Transportation Plan

Technical Report #2b

Data Compilation and Review – Socioeconomic Data

September 4, 2018

MPO MISSION STATEMENT

To collaboratively plan, prioritize, and fund the delivery of diverse transportation options.

MPO VISION STATEMENT

Our work will have measurable positive impact by ensuring transportation projects are well selected, funded, and delivered.

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Data Compilation Overview

This Data Compilation and Review Technical Report #2b of Commitment 2045 is the second of two data reports. The data compiled support the analysis of the Metropolitan Transportation Plan (MTP), including relevant geographic information system (GIS) shapefiles, transportation data, and planning documents at the state, regional and local levels. This report details the development of the socioeconomic data for the horizon year 2045; the collection and review of all of the other data, except socioeconomic data, was discussed in Technical Report #2a.

The socioeconomic data consist of five components: population, households, employment, hotel/motel rooms, and school enrollment, all of which were included in the Electronic Data Inventory for the project and previously described in Technical Report #2a.

Socioeconomic Data

The purpose of this section is to summarize the derivation of the updated socioeconomic data for the base year (2015) and the forecasts through the horizon year of 2045 for the Broward MPO planning area, i.e., the developable area of Broward County. Findings from the socioeconomic data task are used to develop an updated set of socioeconomic forecast data files that serve as inputs to the regional travel demand model for the planning area, which, in turn, feeds into the Metropolitan Transportation Plan (MTP) – Commitment 2045.

The socioeconomic data and related model zonal structure from the previous version of the model/MTP served as the starting point for the development of the updated base year and projection data. This zonal structure consists of 953 Traffic Analysis Zones (TAZs) and 2,388 Micro Analysis Zones (MAZs). The socioeconomic variables are also unchanged and consist of the key variables of population, households, employment, hotel/motel rooms, and school enrollment.

The socioeconomic database development entailed a comprehensive data collection effort that included gathering a host of pertinent variables and timeframes from a number of public and private sources as well as supplemental

meetings with regional planners and other officials that work on or follow socioeconomic forecasts and developments in Broward county.

Population and Household Data

Review of Historical Growth

The development of population and household data started with an analysis of the related historical growth to provide context for the growth trends in these variables in Broward County over different time periods. The pertinent data were collected primarily from the U.S. Census Bureau.

For total population, the Census data covered the period 1990–2017. As shown in Table 1 and Figure 1, the county’s population increased by 636,000, from 1.26 million in 1990 to 1.89 million in 2015 to 1.94 million in 2017. The County’s compound average annual growth rate (CAAGR) between 1990 and 2015 was 1.7%, which has decelerated somewhat recently (2010–2015). This longer-term average growth rate was somewhat below the corresponding rate for the State as a whole (1.8%) but above the average national population growth pace of 1%.

Growth in households historically has shown a similar pattern to population, albeit at a somewhat slower pace. Between 1990 and 2015, the County’s households rose from about 532,000 to 743,000, an absolute growth of 211,000 or 1.3% per year, on average (see Table 2 and Figure 2).

Table 1 – Historical Population Change in Broward County

Year					Absolute Growth 1990–2015	CAAGR	
1990	2000	2010	2015	2017		1990–2015	2010–2015
1,255,531	1,623,018	1,784,066	1,891,684	1,935,878	636,153	1.7%	1.6%

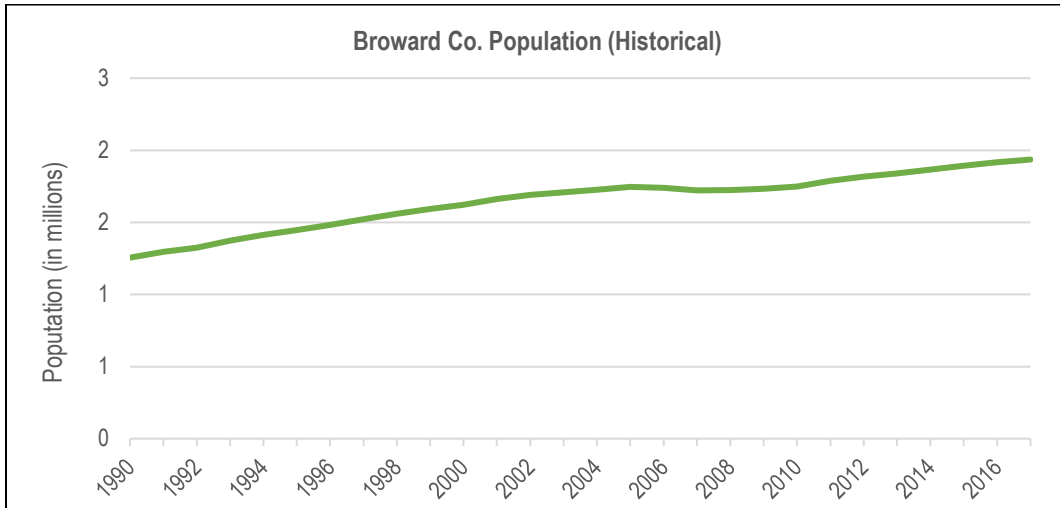
Source: Woods and Poole, 2017

Table 2 – Historical Households Change in Broward County

Year				Absolute Growth 1990–2015	CAAGR	
1990	2000	2010	2015		1990–2015	2010–2015
531,624	657,462	687,689	742,513	210,889	1.3%	1.5%

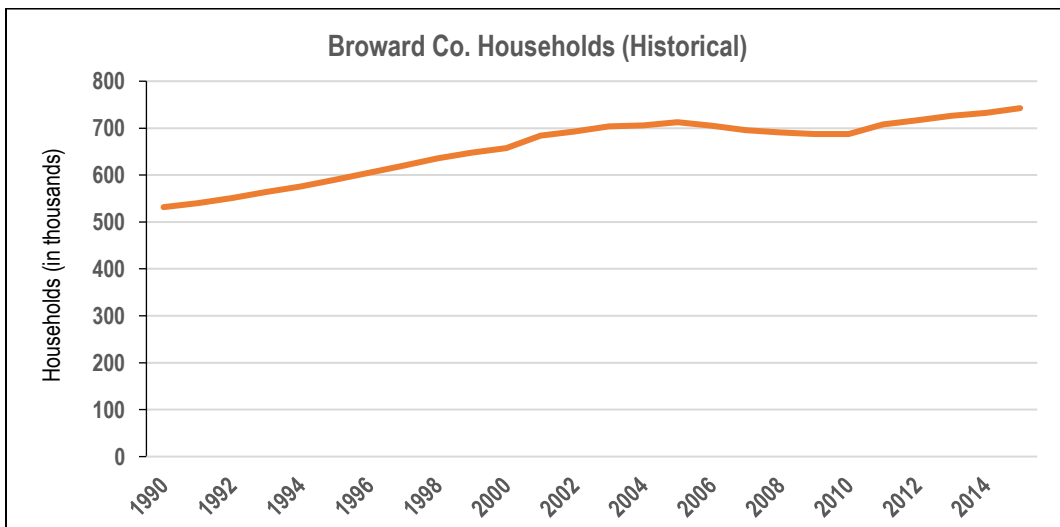
Source: Woods & Poole Economics, 2017

Figure 1 – Historical Population Change in Broward County



Source: U.S. Census

Figure 2 – Historical Households Change in Broward County



Source: Woods & Poole Economics, 2017.

Base Year and Forecast

The base year estimates and forecast of population and household were obtained from Broward County's Planning and Development Management Division (PDMD). These latest demographic sets (made available in April 2018)

for the County, known as Population Forecast and Allocation Model (PFAM 2017), offer TAZ-level household (total excluding group quarters) population and households in the County in five-year increments from 2015 through 2045. The PFAM 2017 population and household totals for the County are summarized in Table 3. Although the primary focus of the task are the base year (2015) and the horizon year (2045), two interim years (2025, 2035) also were included (for most socioeconomic variables). As shown in Table 3, over the forecast horizon (2015–2045), the county’s household population is projected to grow by 369,000 (0.6% per year, on average) to reach the level of almost 2.18 million residents. Over the same timeframe, the PDMD projects Broward’s households to increase by 196,000 (or 0.8% per annum, on average) to almost 929,000 in 2045.

Table 3 – PDMD Forecast of Population and Households Change in Broward County

Variable	Year				Absolute Change	CAAGR
	2015	2025	2035	2045		
Population	1,809,350	1,970,830	2,089,874	2,178,091	368,741	0.6%
Households	732,986	817,282	881,103	928,869	195,883	0.8%

Source: Broward PDMD, April 2018. Excludes group quarters population

To better understand these forecasts and what went into their derivation, the MTP team communicated (including in person) with PDMD planners. Based on these communications and related documents review, it was understood that the PDMD undertook a comprehensive effort that included taking into account various pertinent factors and sources in the derivation of the PFAM 2017 demographic estimates and projections. Based on the recent growth, PDMD envisioned that the County will reach full build-out sometime in the 2020–2025 timeframe. Consequently, future growth would have to be accommodated by redevelopment. In allocating such redevelopment, PDMD planners were guided by the County’s latest Land Use Plan (2017). The PDMD planners based their projections on a number of constraints expected to affect future growth, including housing prices/affordability, rising energy costs, water access and cost challenges, and climate/ocean flooding as key capacity concerns.

Communications (including in person) with the developers of the latest Land Use Plan (Broward County Planning Council [BCPC]) and the Greater Fort Lauderdale Alliance also were conducted to further understand the expected development in the County. Similar issues regarding the challenges and constraints to future growth were raised, such as housing affordability, drinking water access, and rising ocean levels, while at the same time acknowledging that the County remains an appealing place to live.

Socioeconomic forecasts in PFAM 2017 were compared to other sources, which included the Bureau of Economic and Business Research (BEBR) at the University of Florida (January 2018), Moody’s Analytics (February 2018), and Woods & Poole Economics, Inc. (2017). The county-level population for Broward from each of these sources through 2045 is presented in Table 4. As shown, the average annual rate forecasted by the County’s PDMP (at 0.6%) is the lowest compared to the other sources, with BEBR’s at 0.8%, Moody’s at 1.2%, and Woods & Poole’s the fastest, at 1.3% per annum.

Table 4 – Broward Population Forecasts by Source

Source	Year				CAAGR
	2015	2025	2035	2045	2015–2045
County ^a	1,809,350	1,970,830	2,089,874	2,178,091	0.6%
BEBR ^b	1,827,367	2,045,800	2,193,900	2,298,200	0.8%
W&P ^c	1,896,425	2,181,734	2,490,367	2,794,936	1.3%
Moody’s ^d	1,889,486	2,207,469	2,516,539	2,714,095	1.2%

^a Broward PDMD (April 2018), excludes group quarters population.

^b BEBR (2018)

^c Woods & Poole Economics (2017)

^d Moody’s Analytics (February 2018)

Similarly, for households, comparisons were made of the County’s PFAM 2017 projections to those by Moody’s and Woods & Poole (BEBR does not offer household forecasts). As presented in Table 5, PFAM 2017 is relatively lower than the other forecasting sources when it comes to future growth in households.

Overall, despite the most conservative growth pace (relative to other available forecast sources), the County’s PDMD projections were selected as the base population and households forecast to serve as the TAZ-level input into the MTP because of consistency with numbers to be used across County departments.

Table 5 – Broward Household Forecasts by Source

Source	Year				CAAGR
	2015	2025	2035	2045	2015-2045
County ^a	732,986	817,282	881,103	928,869	0.8%
W&P ^b	742,513	852,423	928,522	1,013,991	1.0%
Moody's ^c	739,313	900,082	1,063,087	1,180,011	1.6%

^a Broward PDMD (April 2018)

^b Woods & Poole Economics (2017)

^c Moody's Analytics (February 2018)

A concurrent effort to update the Southeast Florida Regional Planning Model¹ (SERPM) version 8 database (base year 2015) by the Regional Transportation Plan consultant served as the basis for the distribution of total households and population across related sub-categories across TAZ and MAZ. These subcategories of variables included:

- Household size (1, 2, 3, 4+)
- Household income
- Number of employed household members (0, 1, 2, 3+)
- Households by presence of children (0, 1+)
- Dwelling unit type (single-family, multi-family, mobile home)
- Group quarter status
- Households by type of housing unit
- Age of population in households
- Race/ethnicity of population of households
- Gender of population in households
- School enrollment

Figures 3 through 8 depict the MAZ-level estimates for 2015, projections for 2045, and the projected change from 2015 to 2045 for both population and household densities.

¹ Southeast Florida in this model includes Broward, Miami-Dade, and Palm Beach counties.

Figure 3 – Population Density, 2015, by MAZ

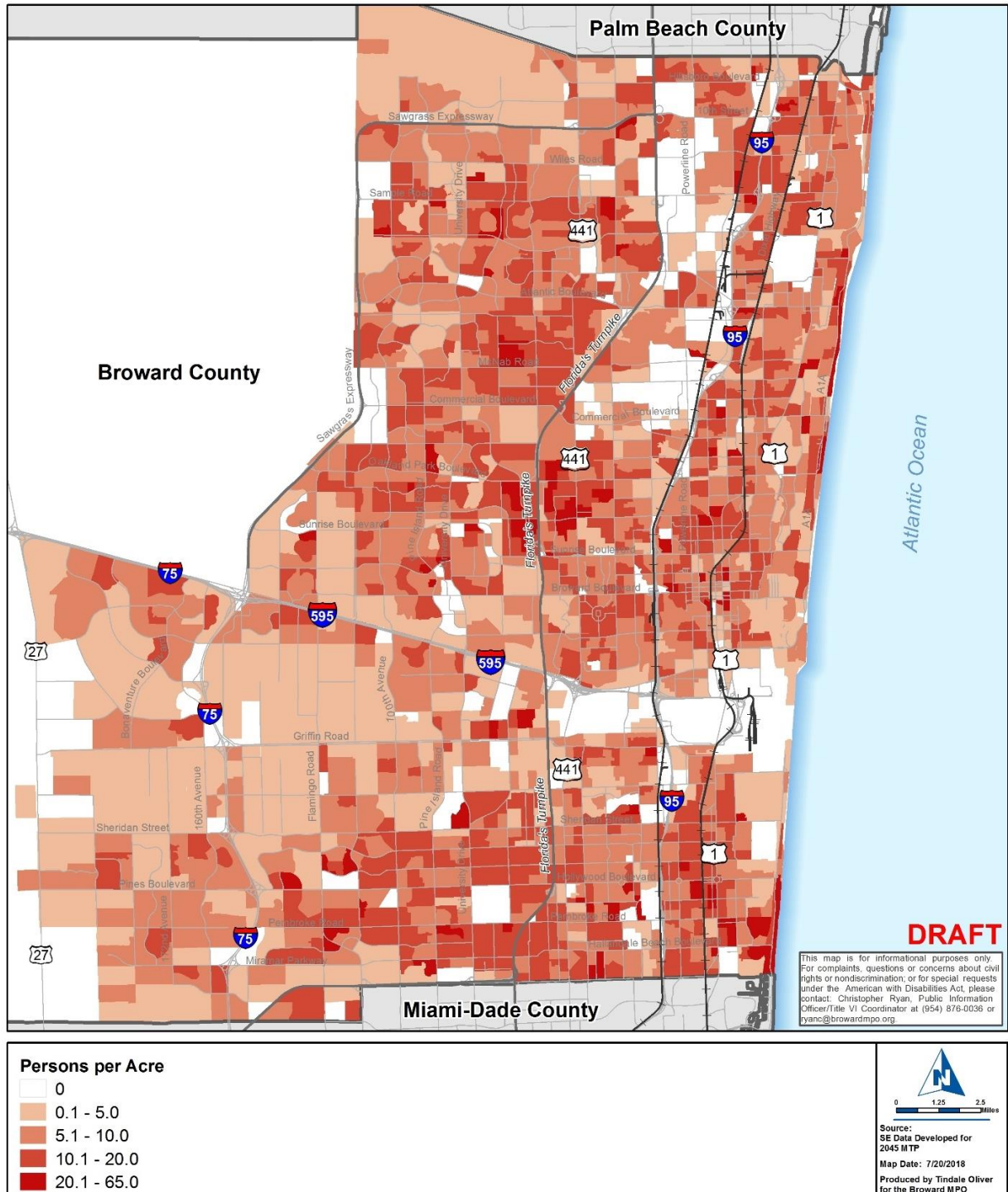
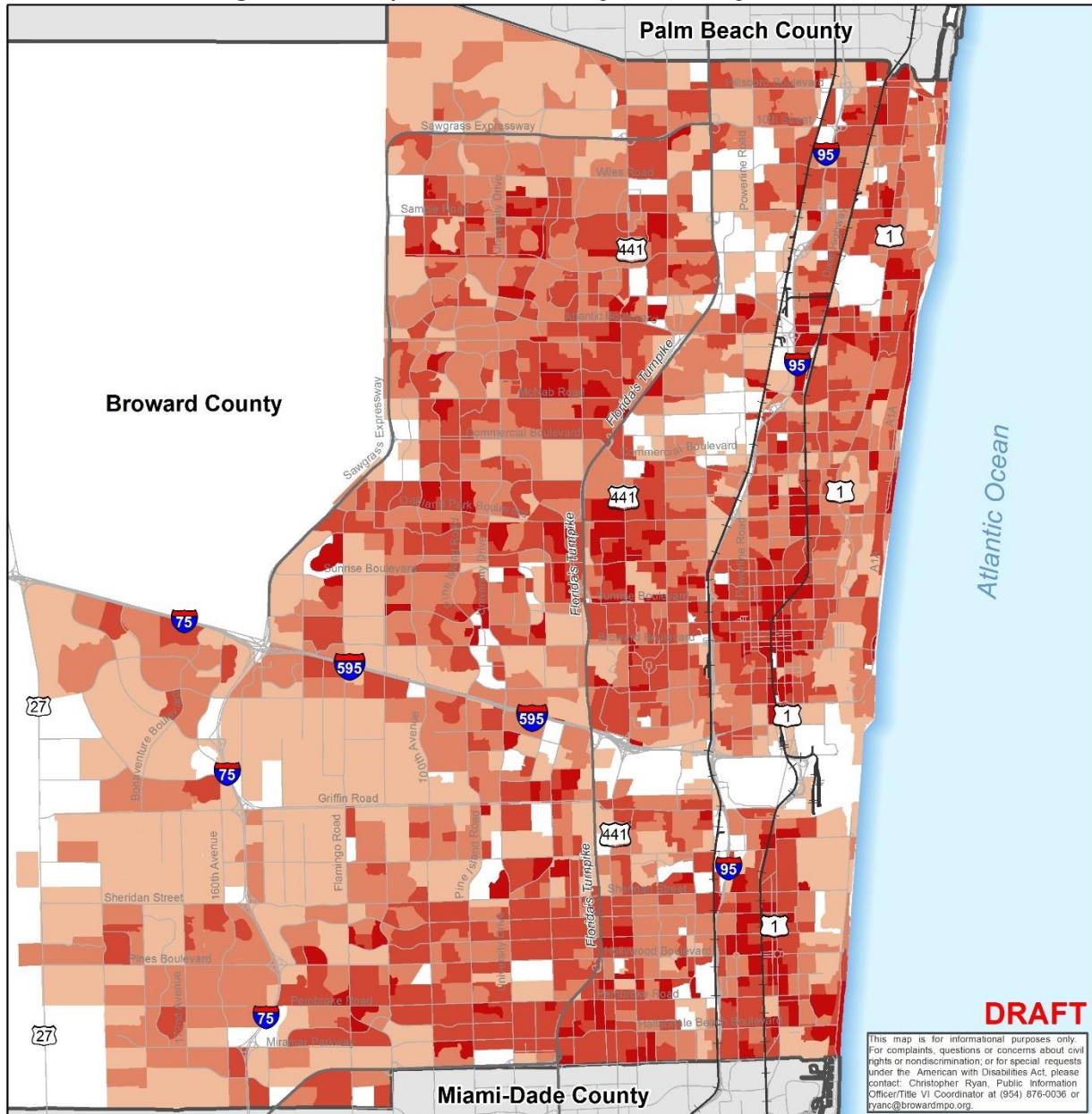


Figure 4 - Population Density, 2045, by MAZ



DRAFT

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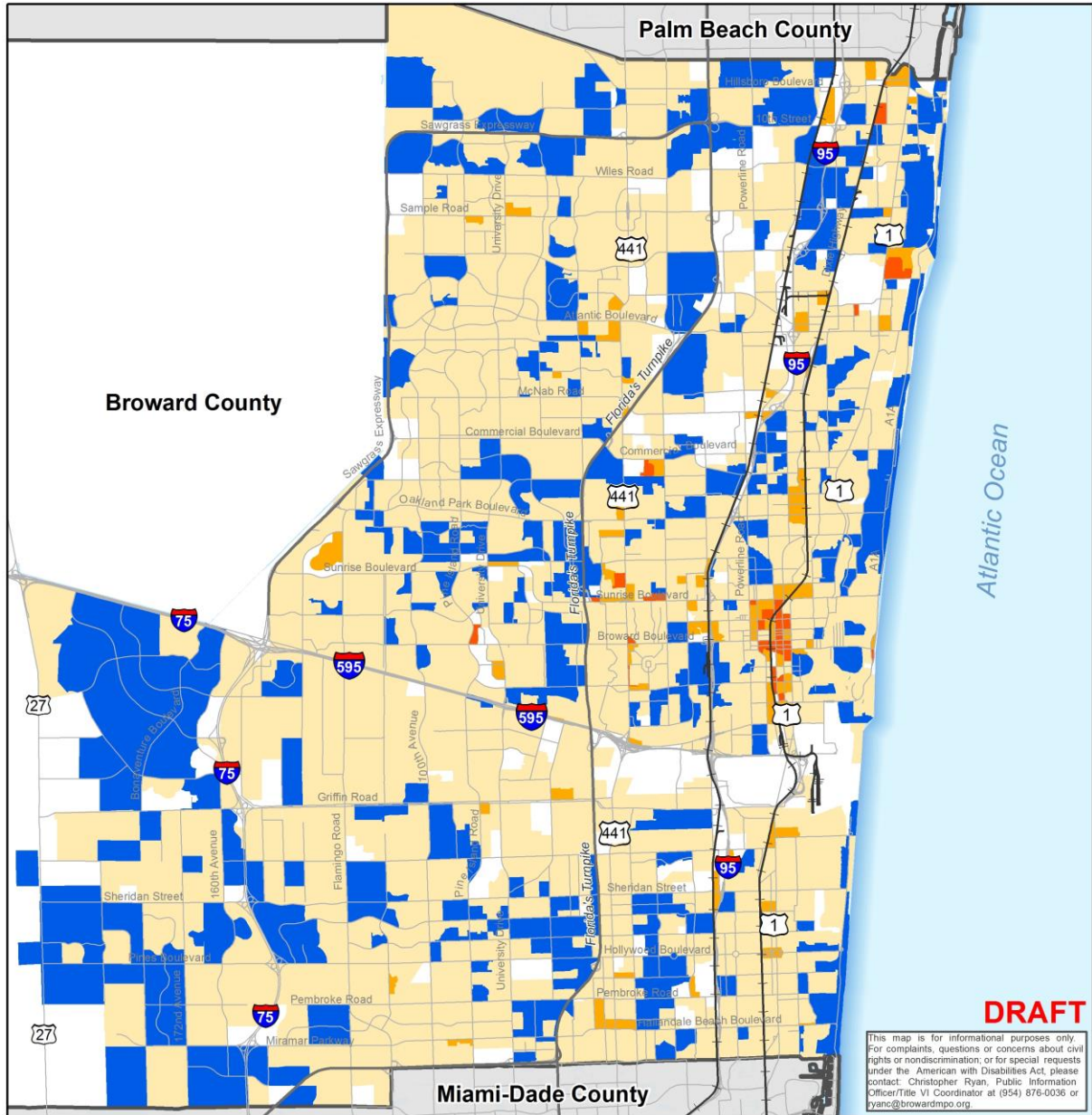
Persons per Acre

0
0.1 - 5.0
5.1 - 10.0
10.1 - 20.0
20.1 - 65.0



Source: SE Data Developed for 2045 MTP
 Map Date: 7/20/2018
 Produced by Tindale Oliver for the Broward MPO


Figure 5 – Change in Population Density, 2015–2045, by MAZ



Population Density Change (Persons per Acre)	
■	< 0
■	No Change
■	0.01 - 10.0
■	10.1 - 20.0
■	20.1 - 65.0

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This map is for informational purposes only. For complaints, questions or concerns about civil rights or nondiscrimination, or for special requests under the American with Disabilities Act, please contact Christopher Ryan, Public Information Officer/Title VI Coordinator at (954) 876-0036 or ryanc@browardmpo.org.



Source: SE Data Developed for 2045 MTP
Map Date: 7/20/2018
Produced by Tindale Oliver for the Broward MPO

Figure 6 - Household Density, 2015, by MAZ

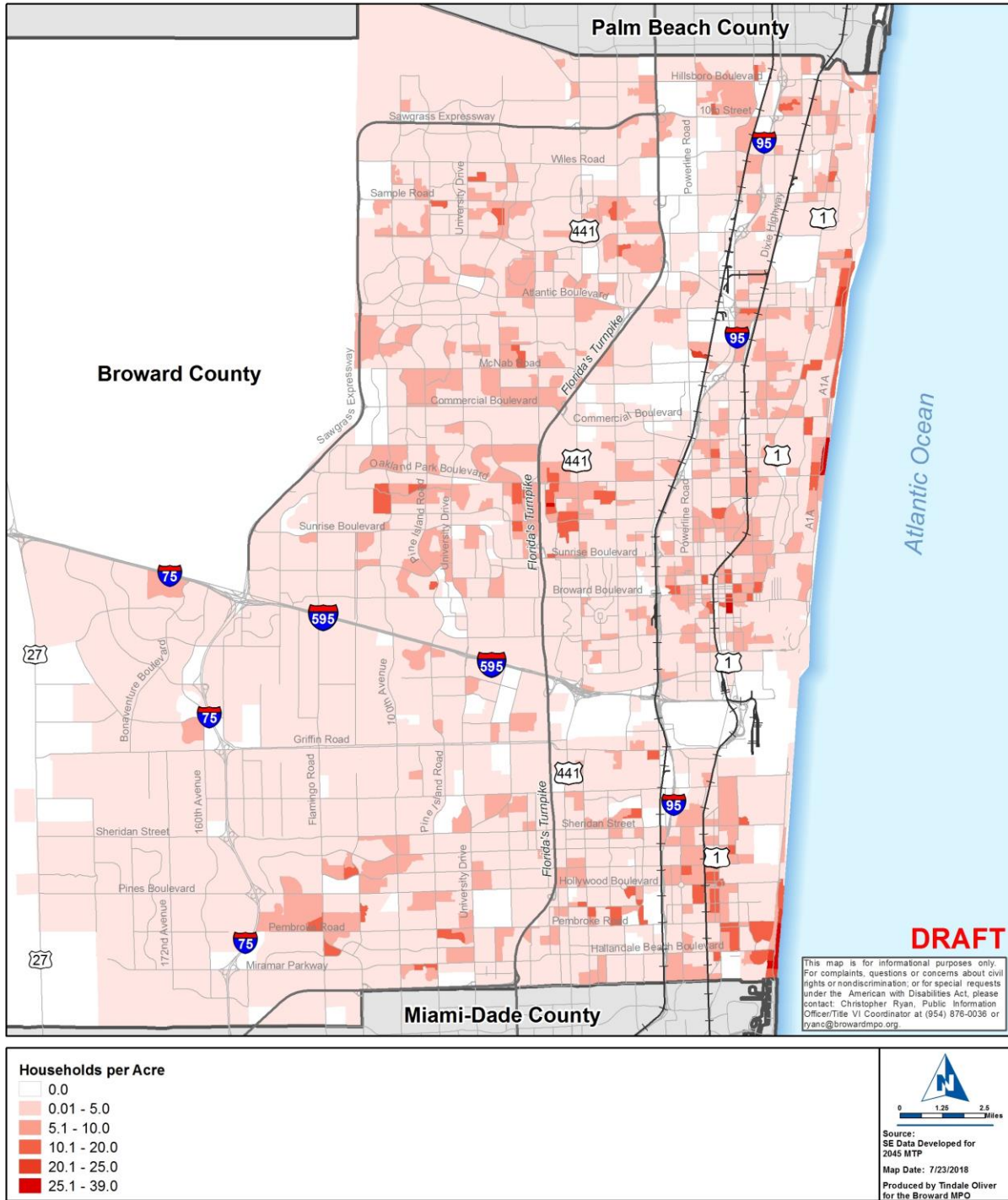


Figure 7 - Household Density, 2045, by MAZ

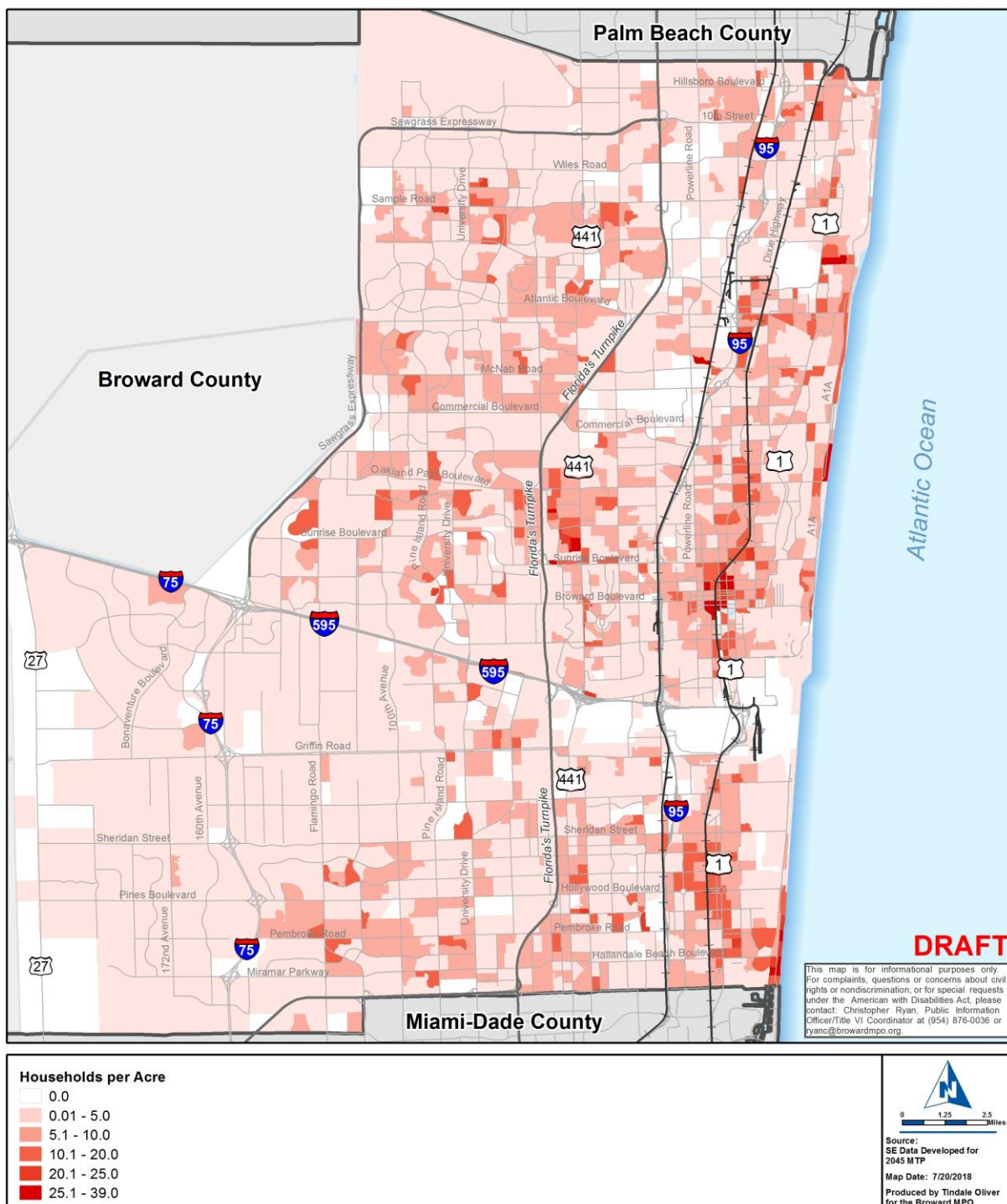
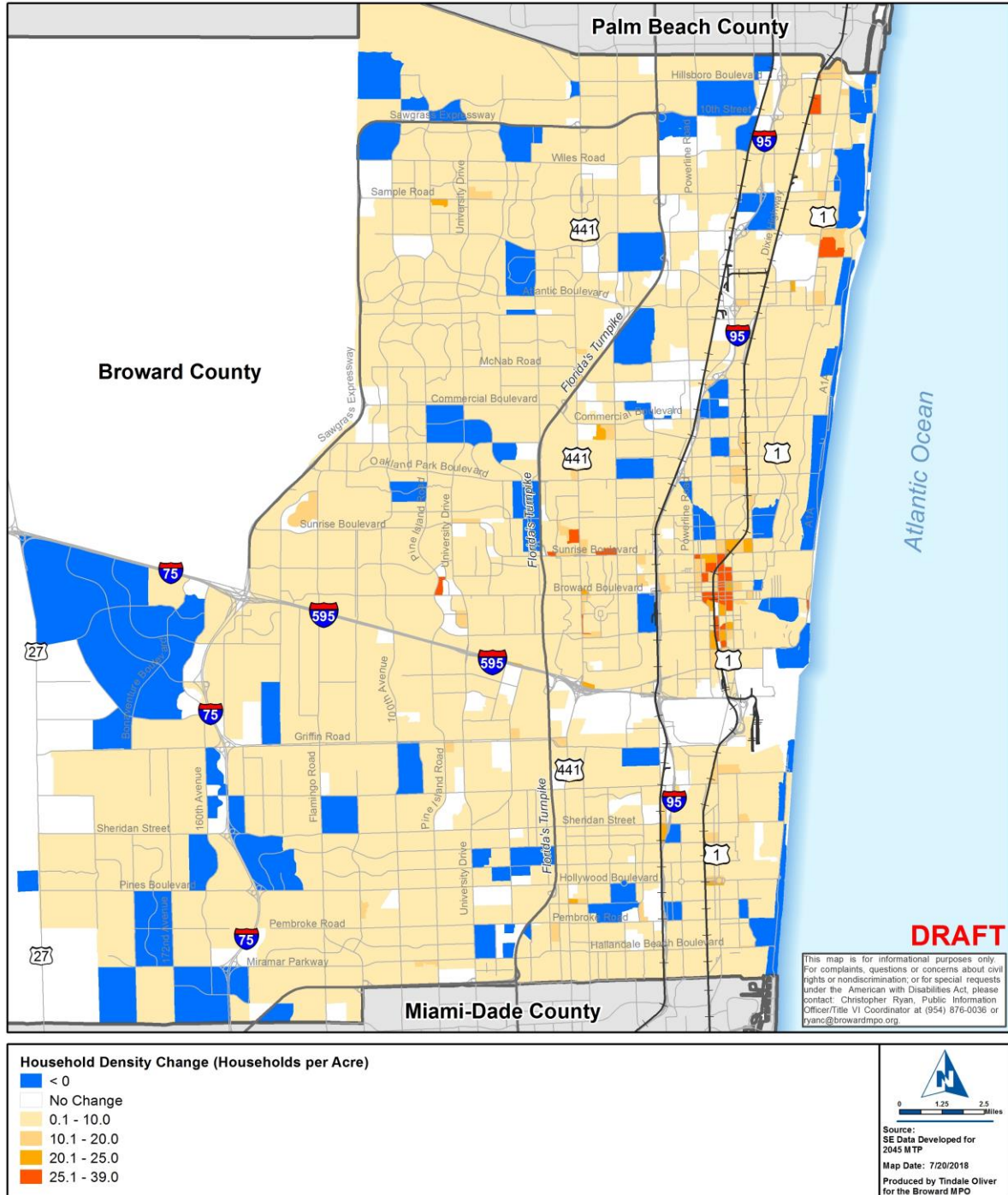


Figure 8 - Change in Household Density, 2015-2045, by MAZ



Employment Data

Review of Historical Growth

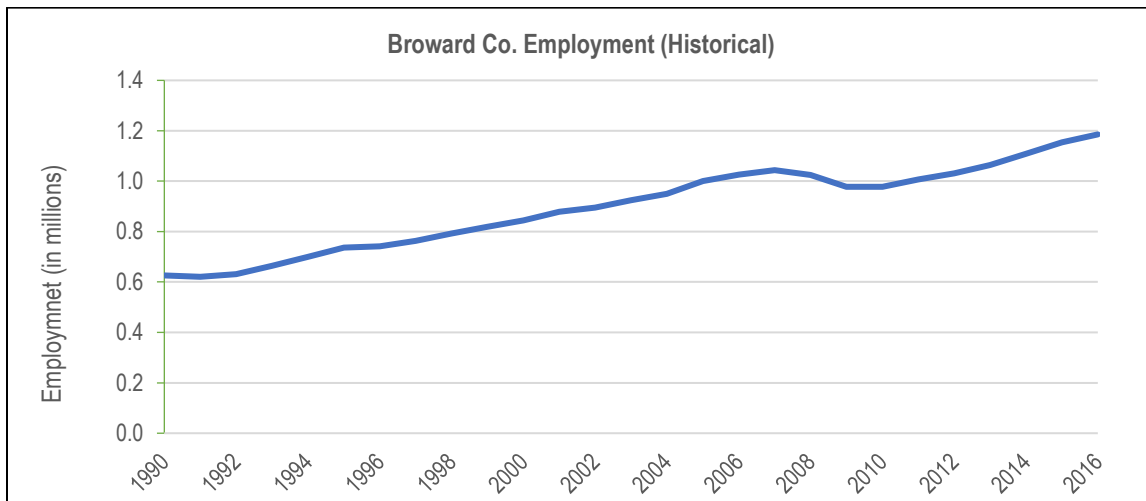
Similar to other variables, the development of employment data began with an analysis of the related historical trends in Broward County. Different public data sources served this purpose, primarily from the Bureau of Economic Analysis (BEA). As summarized in Table 6 and Figure 9, Broward’s total employment grew from 627,000 in 1990 to about 1.53 million in 2015, a difference of 527,000, or 2.5% annually. Employment growth picked up pace in the more recent years, to 3.4% per year from 2010–2015.

Table 6 – Historical Employment Change in Broward County

Year				Absolute Growth 1990–2015	CAAGR	
1990	2000	2010	2015		1990– 2015	2010– 2015
626,542	844,299	977,134	1,153,667	527,125	2.5%	3.4%

Source: Bureau of Economic Analysis, February 2018.

Figure 9 – Historical Employment Change in Broward County



Source: BEA, February 2018.

Base Year and Forecast

The concurrent SERPM 8 regional model update was used to develop base year employment in Broward County at the TAZ and MAZ levels. In this latest available version of the SERPM update, Broward's 2015 employment totaled 961,607. That figure was based on wage and salary (W&S) employment using the Florida Department of Transportation's (FDOT) estimate, which, in turn, was based on the BEA's W&S employment estimate, combined with the self-employment estimate from the Public Use Microdata Sample (PUMS). Zonal distributions were checked for reasonableness, with some adjustments made. Worker occupations across total employment were also used based on the SERPM 8 structure.

Meetings with Broward County Planning Council and Great Fort Lauderdale Alliance representatives were also used for guidance on allocating future developments related to employment growth in the County.

Guiding sources used for County future total employment growth included Moody's and Woods & Poole. The two sources use different employment definitions (Woods & Poole's is broader, leading to larger absolute totals). However, in terms of more comparable growth rates, the Woods & Poole forecast also shows stronger average growth (at 1.4% per year) relative to Moody's 1.1% average annual growth projection for the County.

Future year employment totals for the MTP were based on the 2015 base year total from SERPM 8, and a review of the relevant employment and employment to population ratios growth derived by the neighboring regional partners.

The overall compound average annual growth rate of the County's employment in the MTP between 2015 and the 2045 horizon year is projected to be 0.9% (see Table 7). This forecasted average pace is rather conservative, falling significantly lower than Broward's longer-term (26-year, since 1990) historical average of 2.5%/year and the more recent (since 2010) annual average of 3.4%.

Table 7 – Broward Total Employment Forecasts

	Year		CAAGR
	2015	2045	2015–2045
BMPO MTP	961,607	1,241,845	0.9%

Figures 10 through 12 depict employment density by MAZ for 2015 and 2045, and the change in employment density from 2015 to 2045 by MAZ.

Figure 10 – Employment Density, 2015, by MAZ

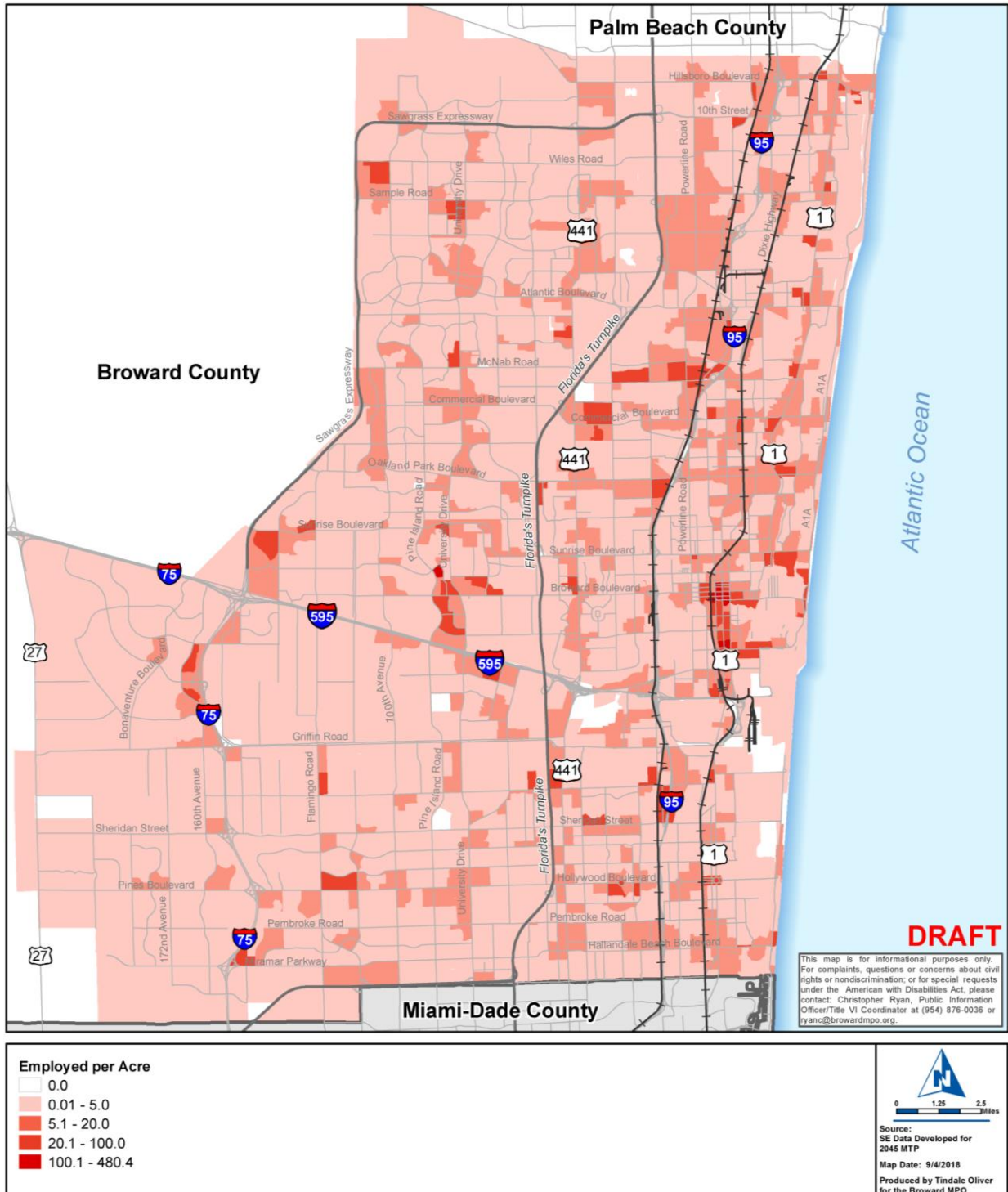


Figure 11 – Employment Density, 2045, by MAZ

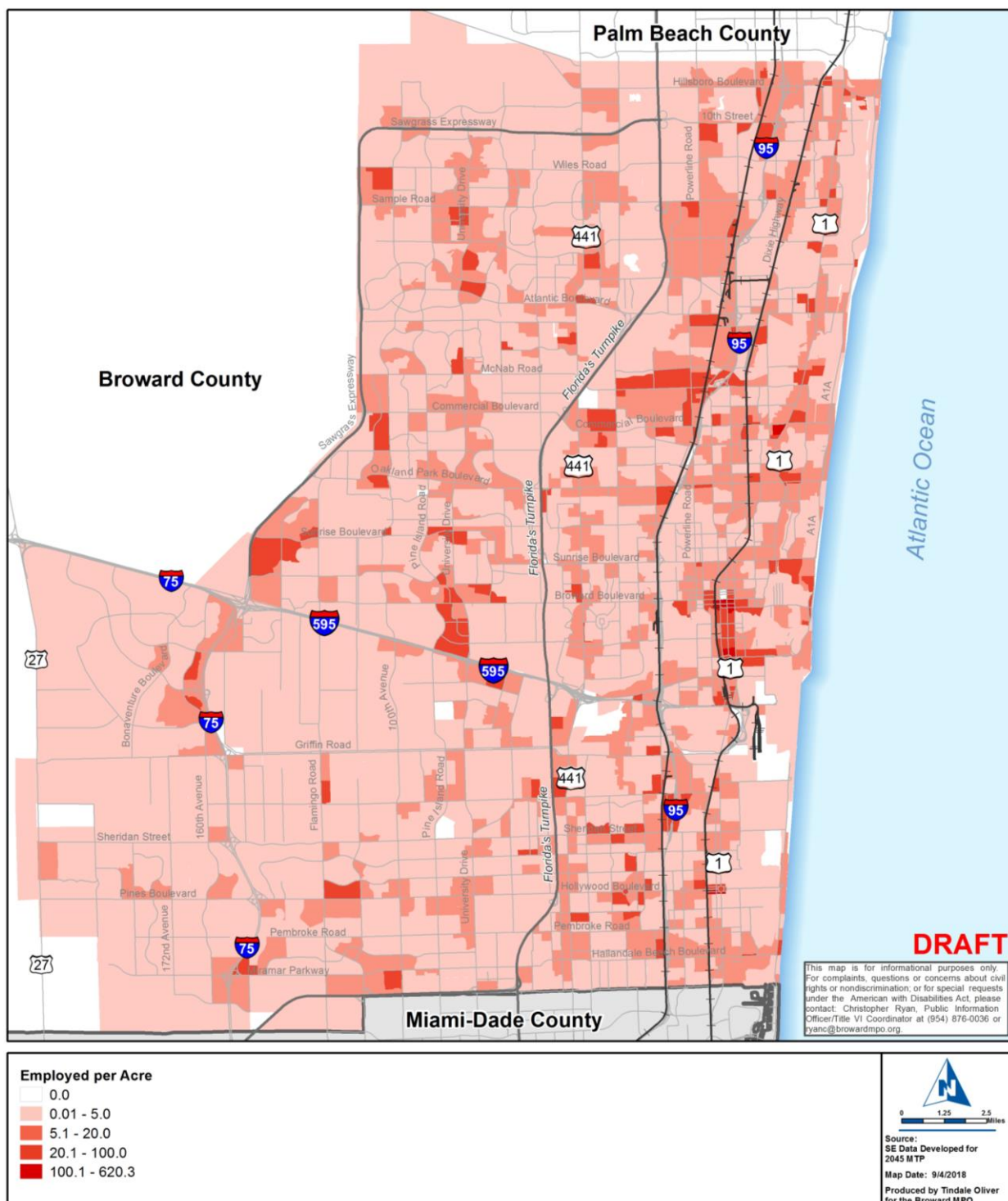
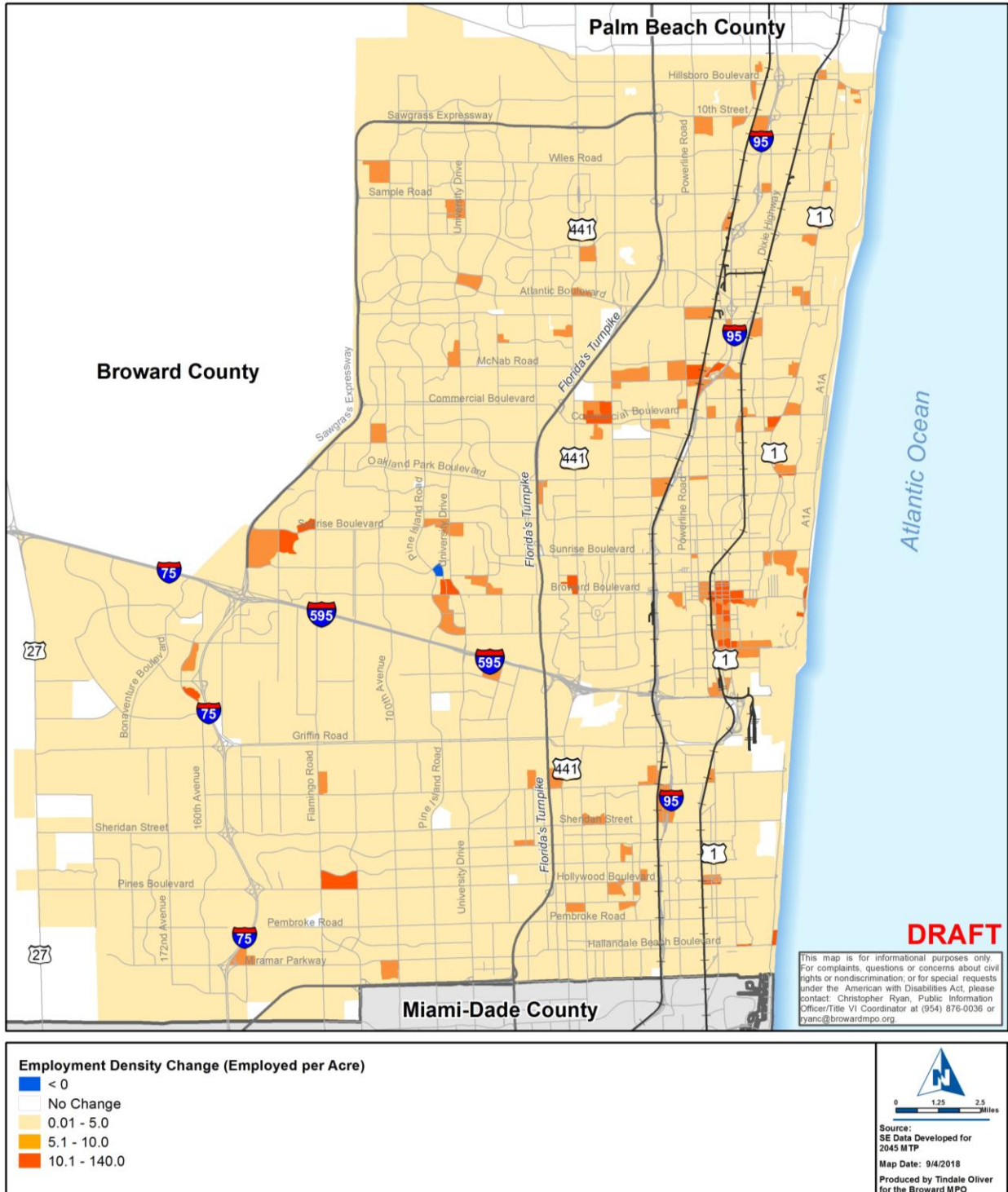


Figure 12 – Change in Employment Density, 2015–2045, by MAZ



Hotel/Motel Room Data

Hotel/motel room data were obtained from the Greater Fort Lauderdale Convention & Visitors Bureau (CVB), and the Florida Department of Business and Professional Regulation (FBPR). The base year hotel/motel room inventory numbers at the TAZ and MAZ levels were compiled by the Broward MPO and total 31,124, which is consistent with county-level 2015 lodging counts provided by the FBPR.

Year 2025 future inventory levels of hotel/motel rooms were derived based on incorporating the data on planned hotel room additions in the County available from the CVB. For 2035 and 2045, the more conservative long-term growth rate for total hotels from the County’s previous model/plan was applied. The resulting overall 2015–2045 average growth pace of hotel/motel rooms in the County is 0.9%, as shown in Table 8.

Table 8 – Broward Hotel/Motel Rooms Forecasts

County	Year				CAAGR
	2015	2025	2035	2045	2015–2045
Broward	31,124	38,661	39,852	41,080	0.9%

Source: HDR, 2018

Figures 13 through 15 depict the number of hotel/motel rooms by MAZ for 2015 and 2045, and the change in the number of rooms between 2015 and 2045.

Figure 13 – Hotel/Motel Rooms, 2015, by MAZ

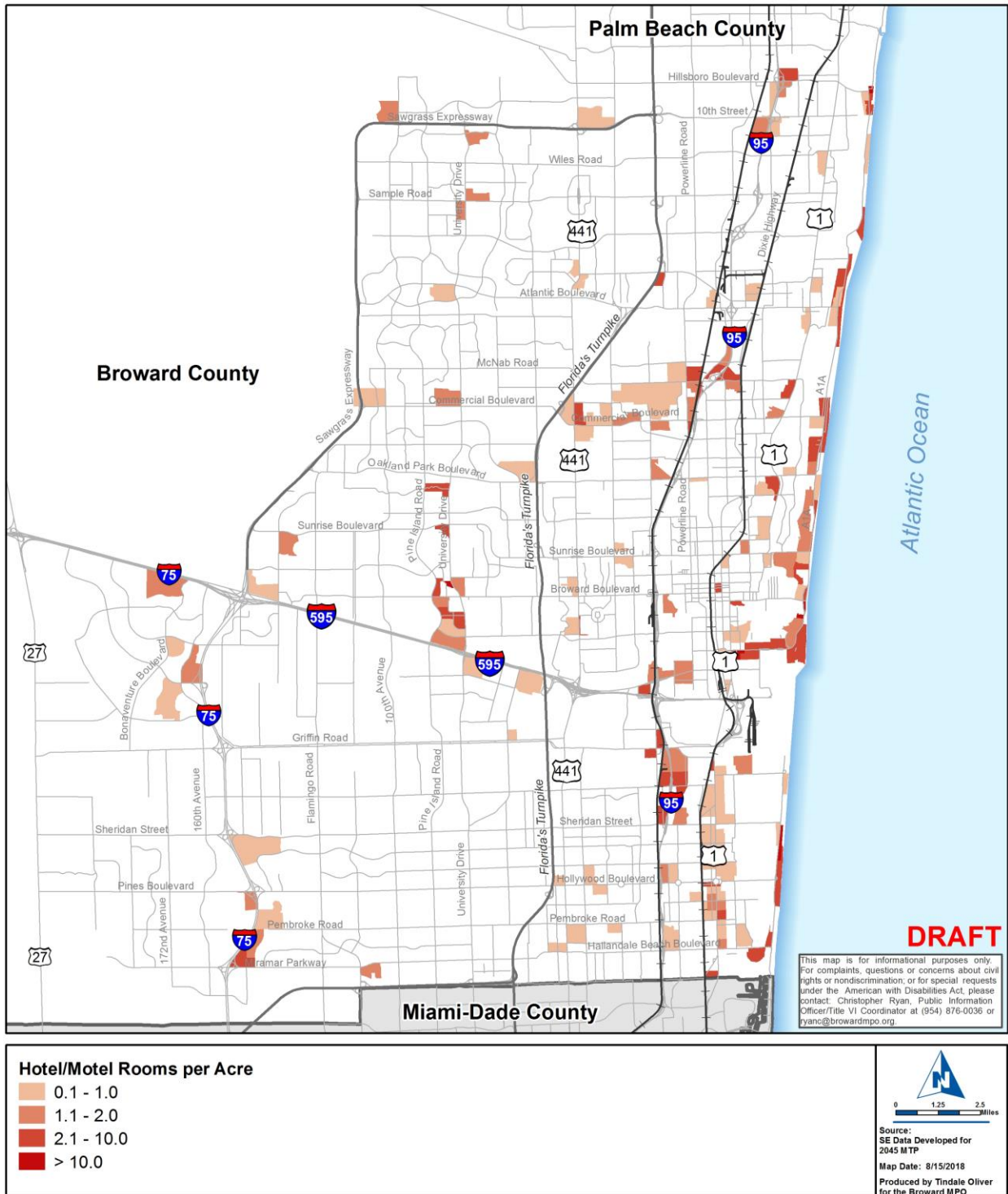


Figure 14 - Hotel/Motel Rooms, 2045, by MAZ

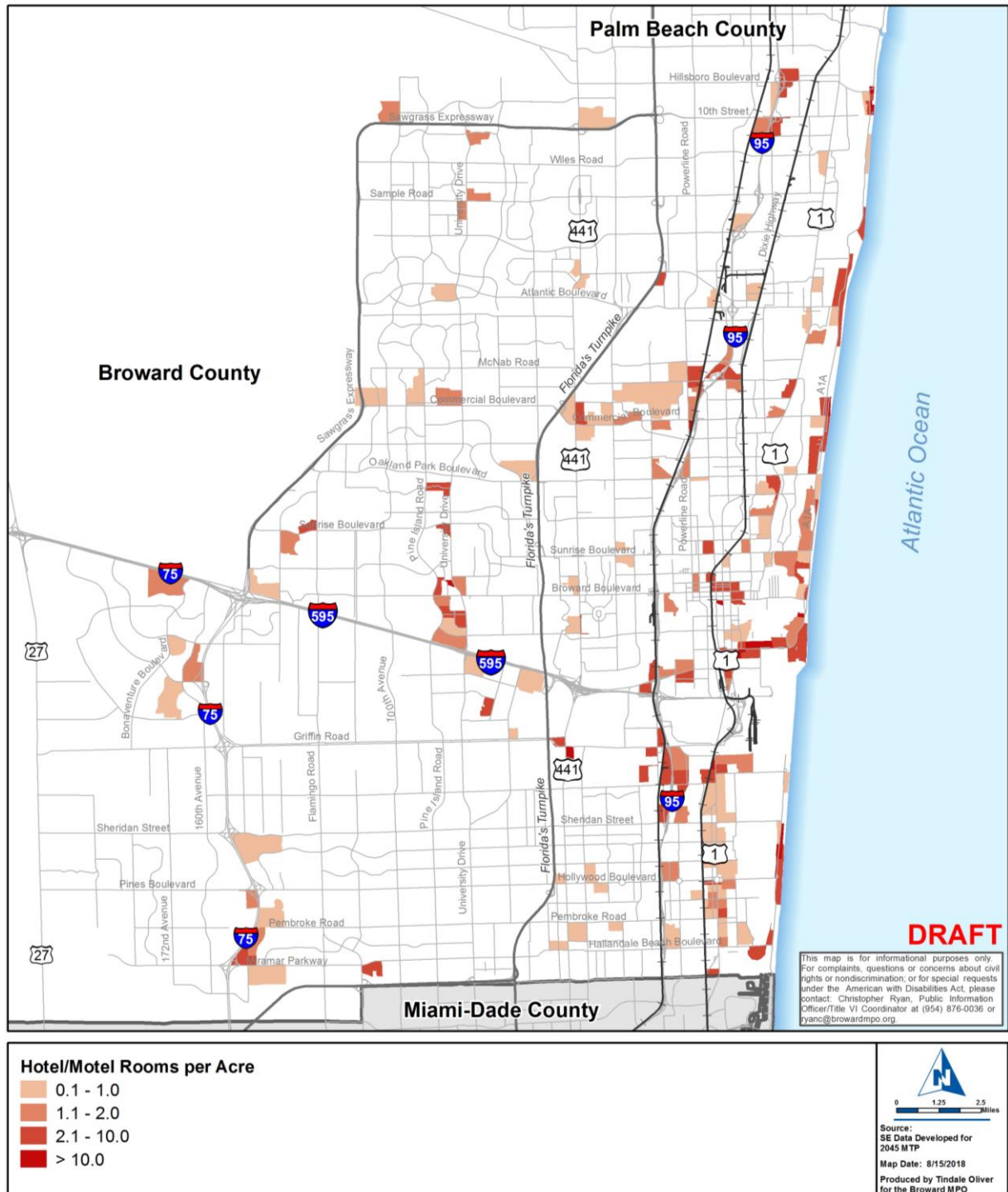
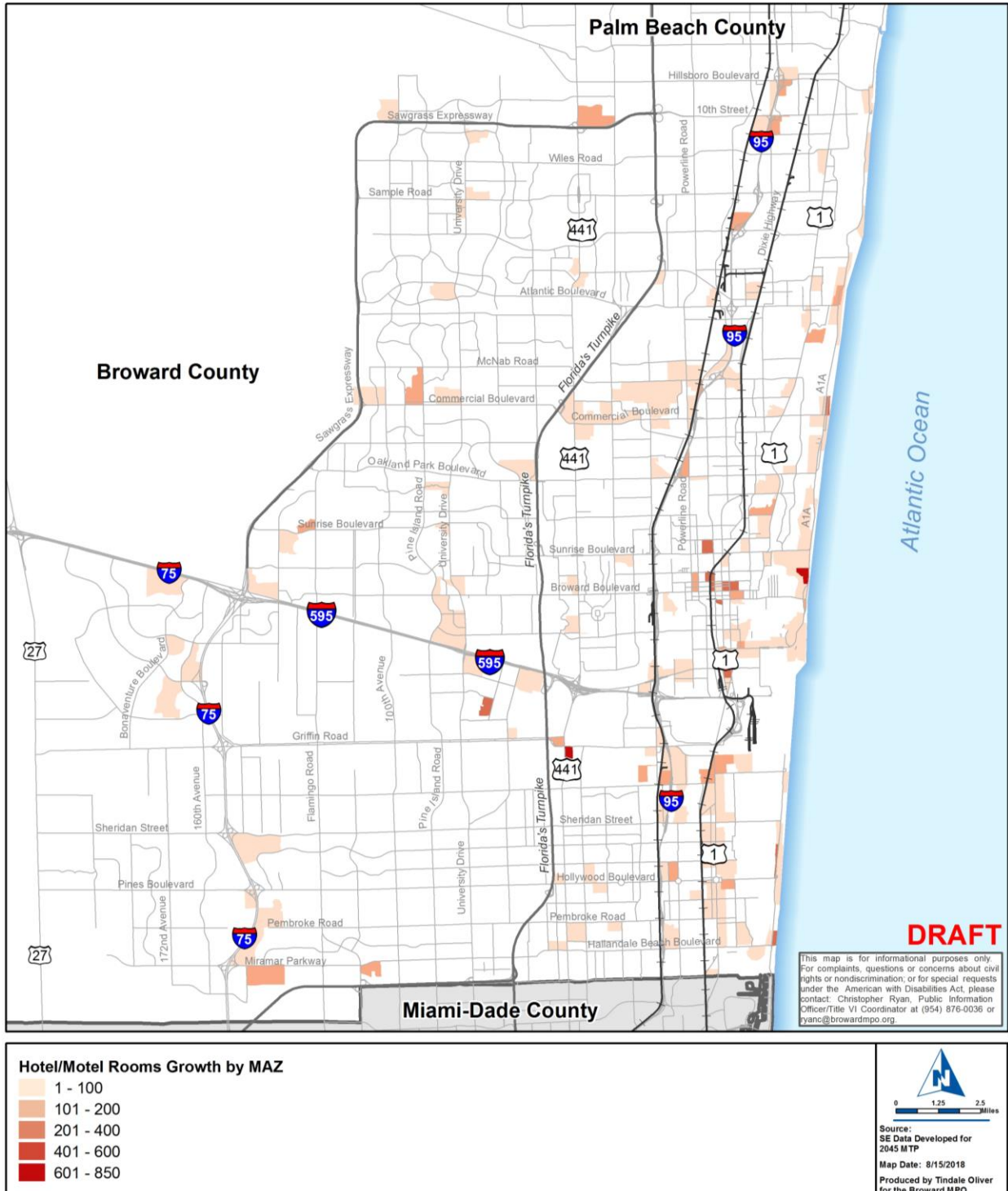


Figure 15 – Change in Hotel/Motel Rooms, 2015–2045, by MAZ



School Enrollment

Review of Historical Growth and Trends

The development of school enrollment data began with an analysis of the historical trends of public school enrollment in Broward County. The primary data source was the Broward County Public Schools Student Generation Rate and Impact Fee Study Update. As summarized in Table 9, Broward’s total public school enrollment decreased from 243,551 in 2000 to 223,231 in 2015. Public school enrollment grew between 2000 and 2004; however, starting in 2005, it began to decline and continued on this path to 2015. Similar information is not available for private school enrollment.

Table 9 – Broward County Public School Enrollment

Year			
2000	2005	2010	2015
243,551	254,676	230,749	223,321

Source: Broward County Public Schools Student Generation Rate and Impact Fee Study Update, 2017

Socioeconomic data developed and used for the Broward MPO’s 2040 Long Range Transportation Plan (LRTP) were used to identify trends in the relationship between population growth and school enrollment, public and private school enrollments, and for grade level splits (grades K–8 and 9–12 and college.

Base Year and Forecast

Base year 2015 school enrollment data by MAZ were provided by the Regional Transportation Plan consultant, which were extrapolated to the year 2045 using the trends observed between 2010 and 2040 for total school enrollment and grade level splits. The split between public and private school enrollments identified in 2015 base year data was used to determine that same split for 2045. School enrollment for K–8 (public + private) and for 9–12 (public + private) were compared to the corresponding forecasts for related school-age population ranges, and the overall percent of enrollment to total population was compared with the overall percent of school-age population to total population. Table 10 provides school enrollment data for 2015 and 2045. The enrollment forecast for 2045 shows growth at the K–8 and college levels and a small decline in the 9–12

level. Unlike the other socioeconomic variables, interim forecasts for 2025 and 2035 were not developed for school enrollment.

Table 10 – Broward County School Enrollment Forecast

Category	Year		Absolute Change	Percent Change
	2015 ^a	2045 ^b		
Public K–8	149,372	162,088	12,716	8.51%
Private K–8	51,606	55,999	4,393	8.51%
Public 9–12	71,037	70,014	-1,023	-1.44%
Private 9–12	18,210	17,948	-262	-1.44%
College	87,259	106,682	19,423	22.26%

^a Regional MAZ Data, 2015

^b Tindale Oliver, 2018

Figures 16 through 18 depict public school enrollments for K–12 for 2015 and 2045 by MAZ and the change from 2015 and 2045 by MAZ. Figures 19 through 21 depict private school enrollments for 2015 and 2045 by MAZ and the change from 2015 to 2045 by MAZ. Figures 22 through 24 depict college enrollments for 2015 and 2045 by MAZ and the change from 2015 to 2045 by MAZ.

Figure 16 – Public School Enrollment, 2015, by MAZ

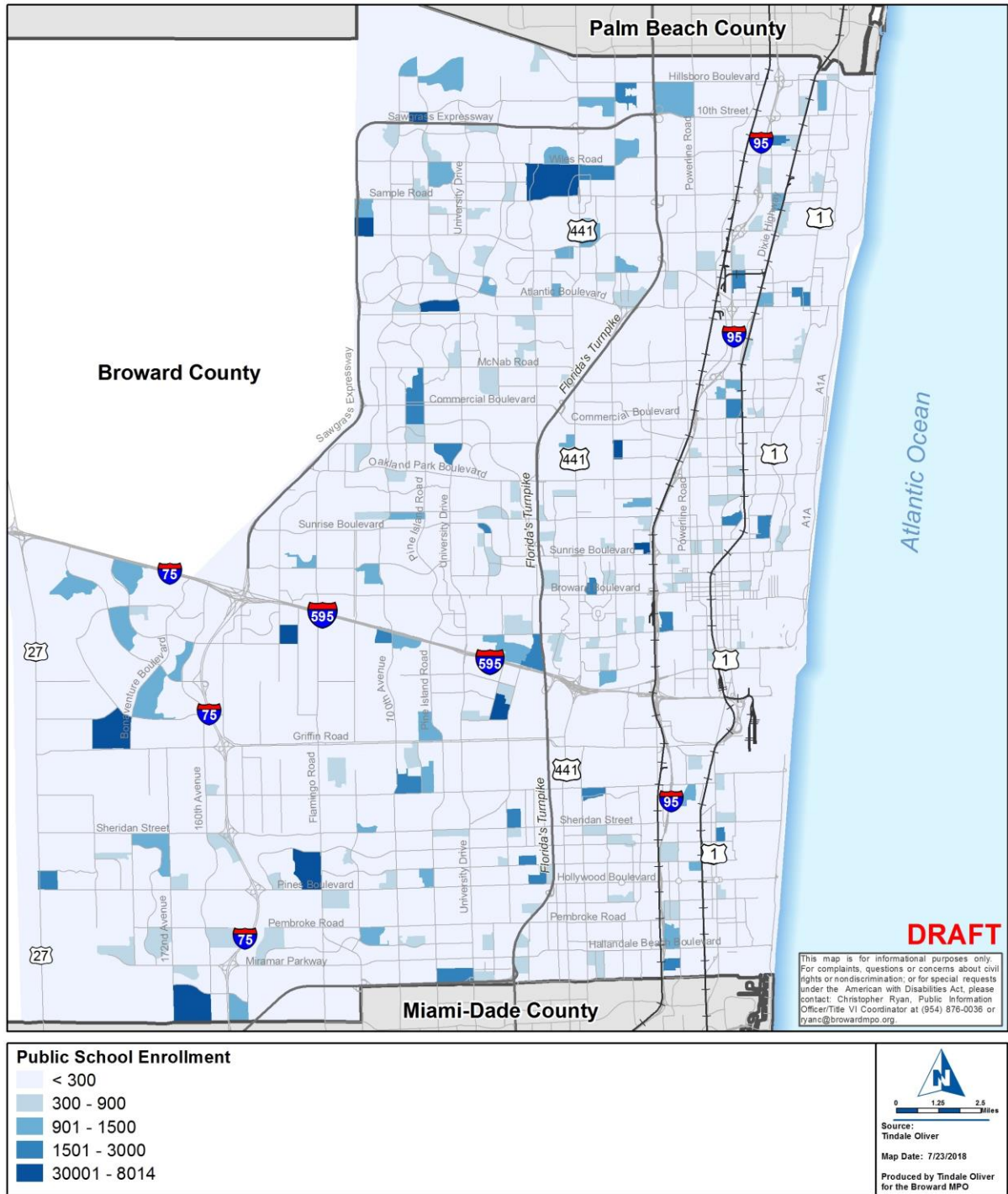


Figure 17 - Public School Enrollment, 2045, by MAZ

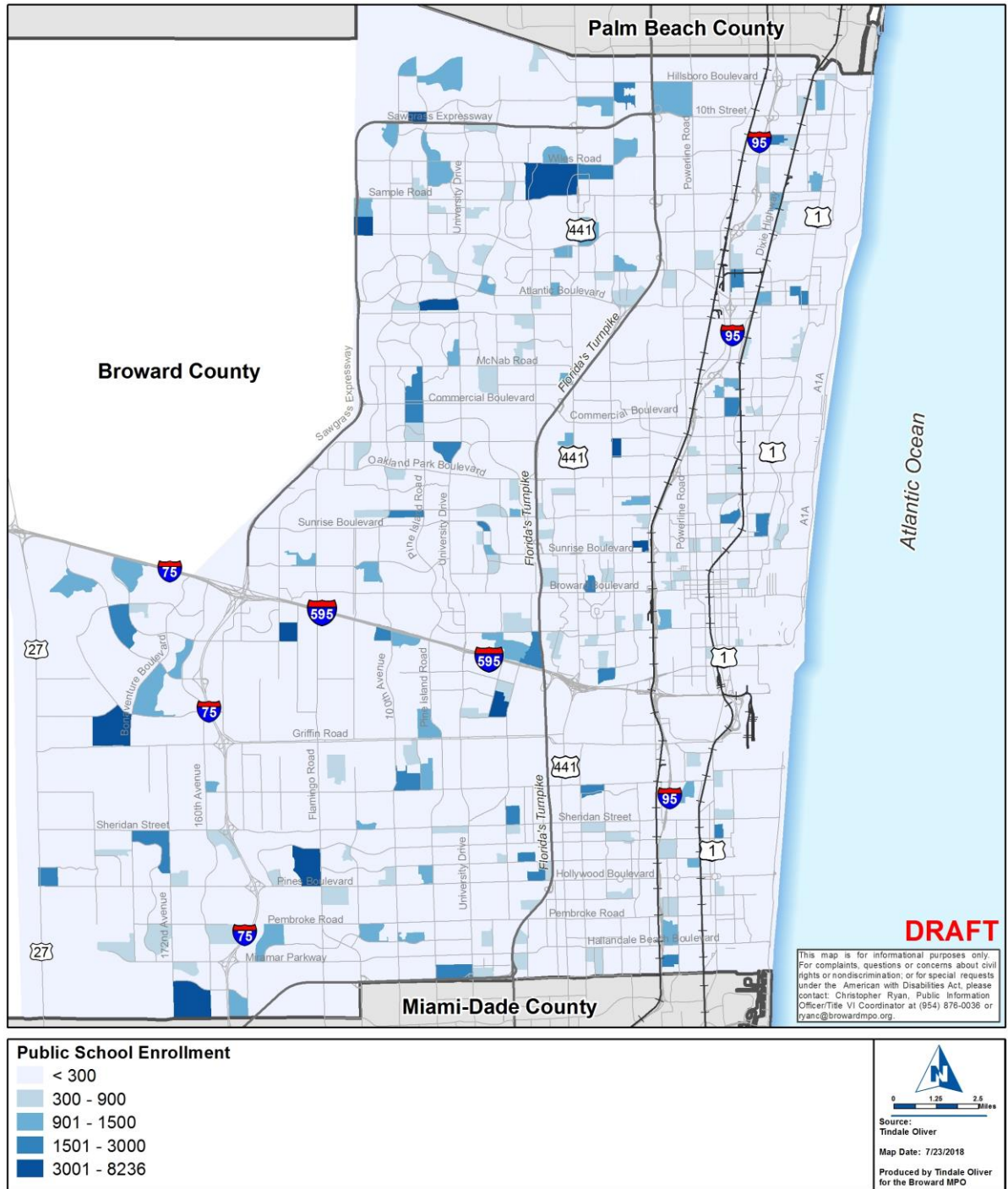


Figure 18 – Change in Public School Enrollment, 2015–2045, by MAZ

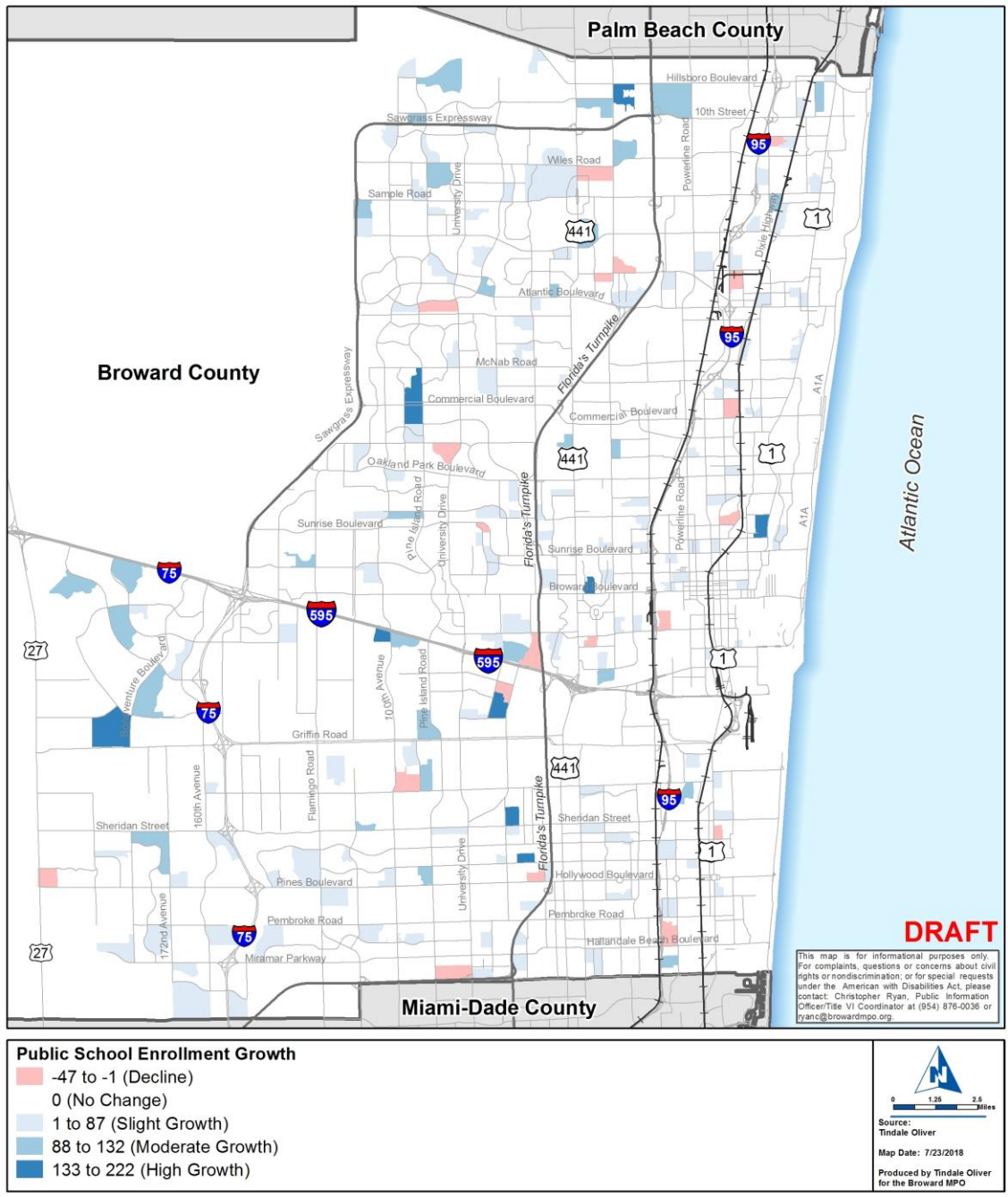


Figure 19 - Private School Enrollment, 2015, by MAZ

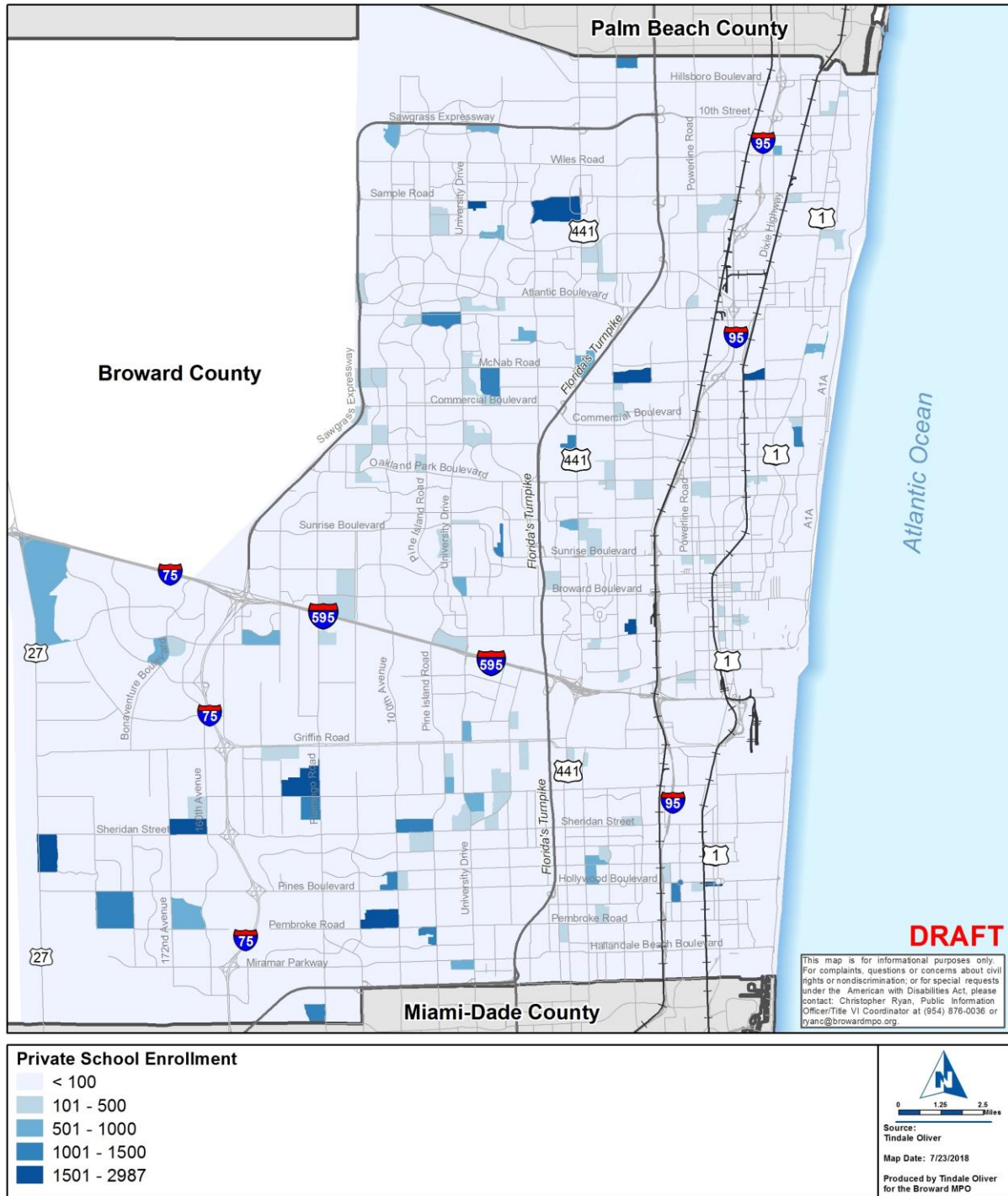


Figure 20 – Private School Enrollment, 2045, by MAZ

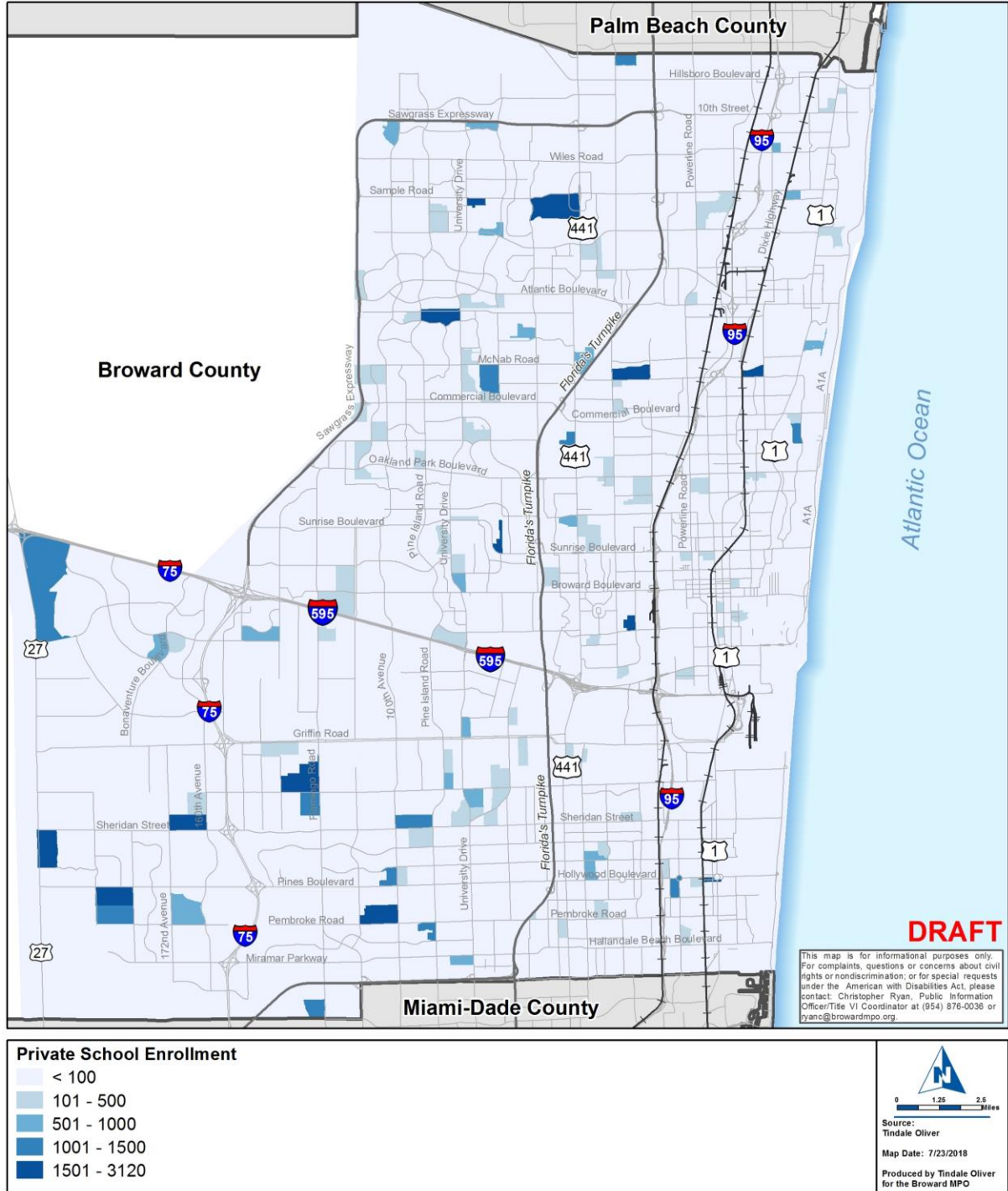


Figure 21 – Change in Private School Enrollment, 2015–2045, by MAZ

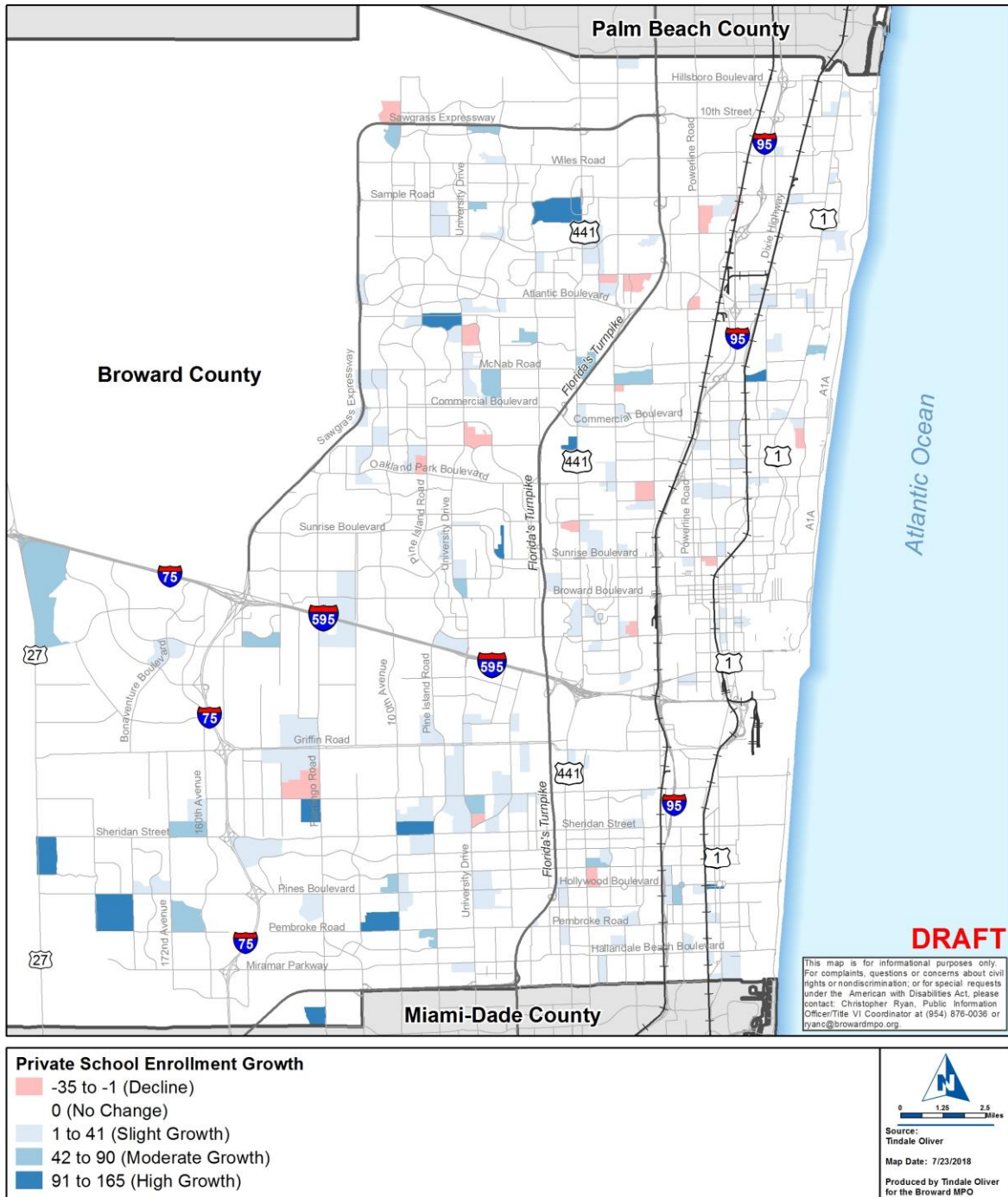


Figure 22 – College Level Enrollment, 2015, by MAZ

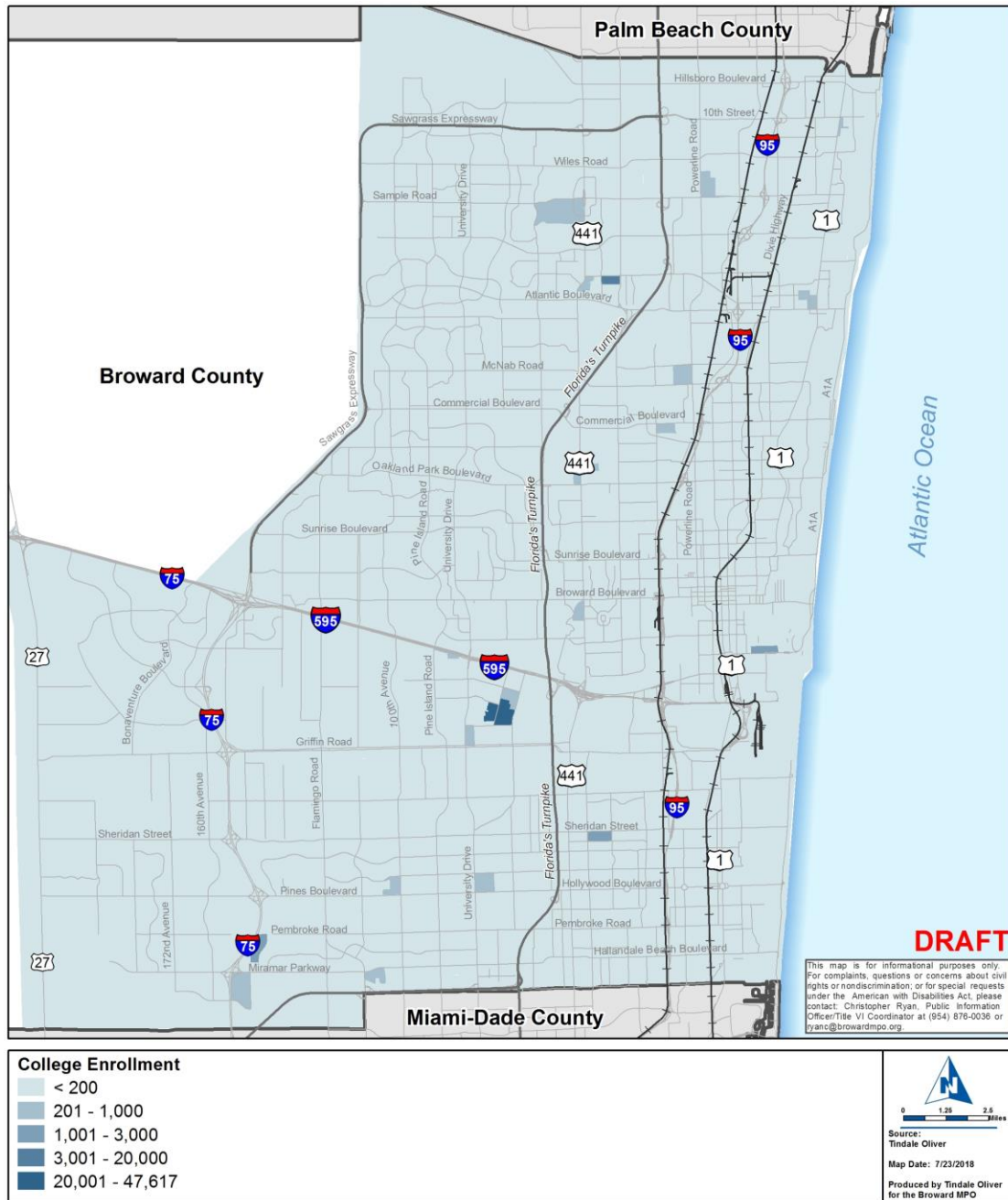


Figure 23 – College Level Enrollment, 2045, by MAZ

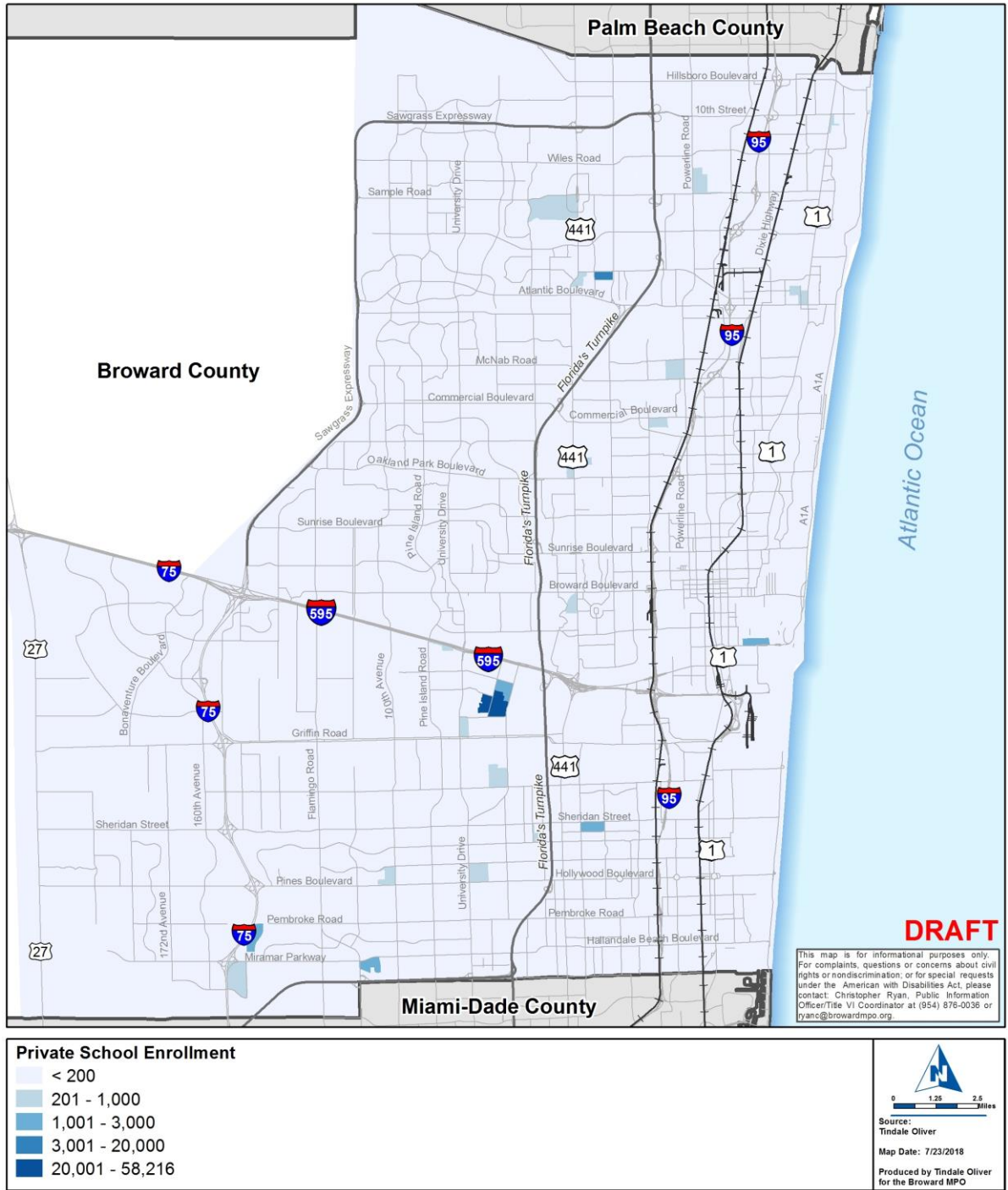
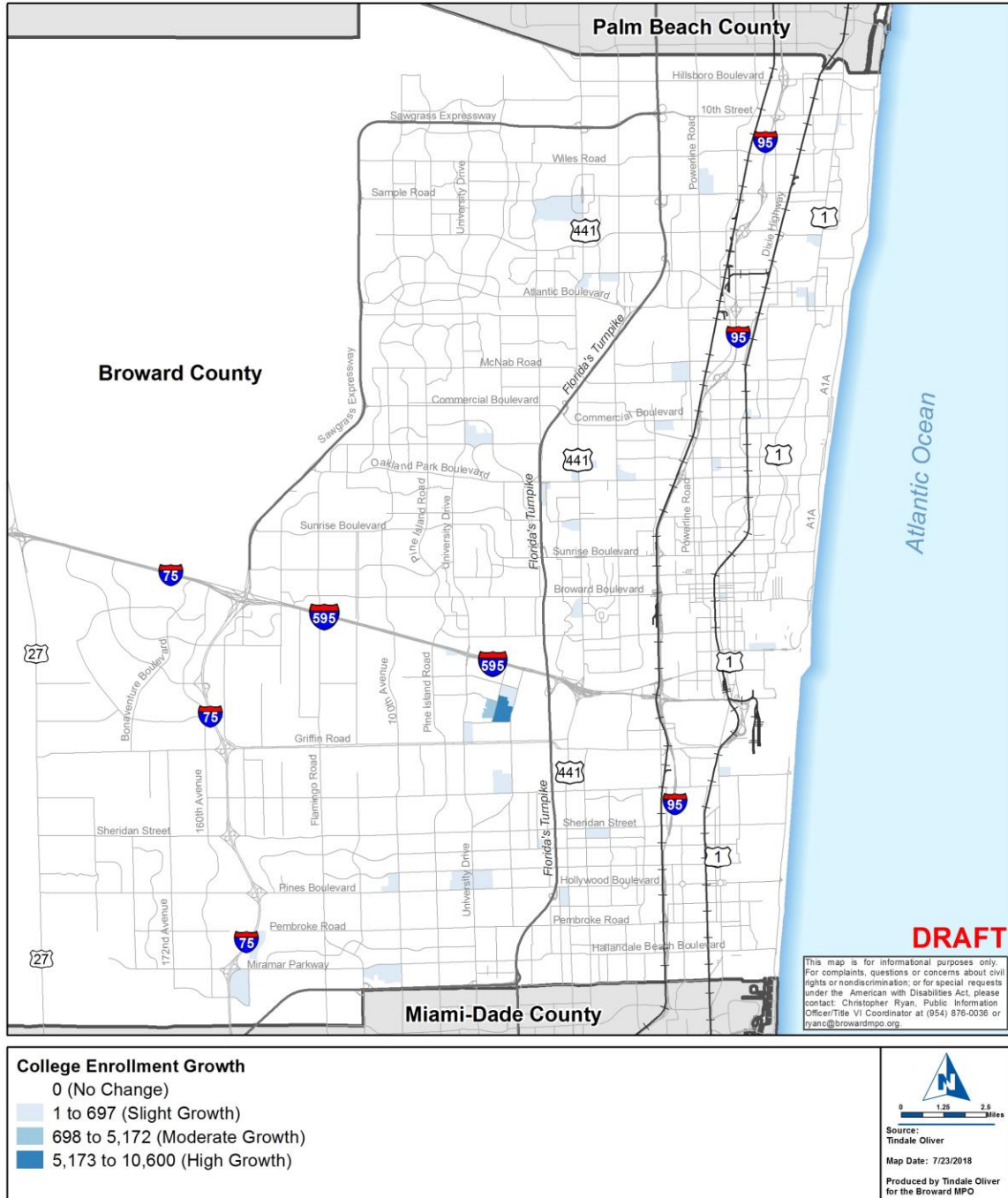


Figure 24 - Change in College Level Enrollment, 2015-2045, by MAZ





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