

Geographic Access Analysis of the State University System

(Assistance with Board of Governors Strategic Planning Process)

DRAFT: Subject to Final Revisions

**Board of Governors
State University System of Florida**

By

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With the assistance of

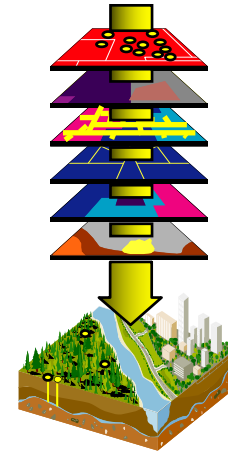
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- Julie Alexander, Julie.Alexander@fldoe.org

8 February 2005

Atlas of the State University System

Report Contents

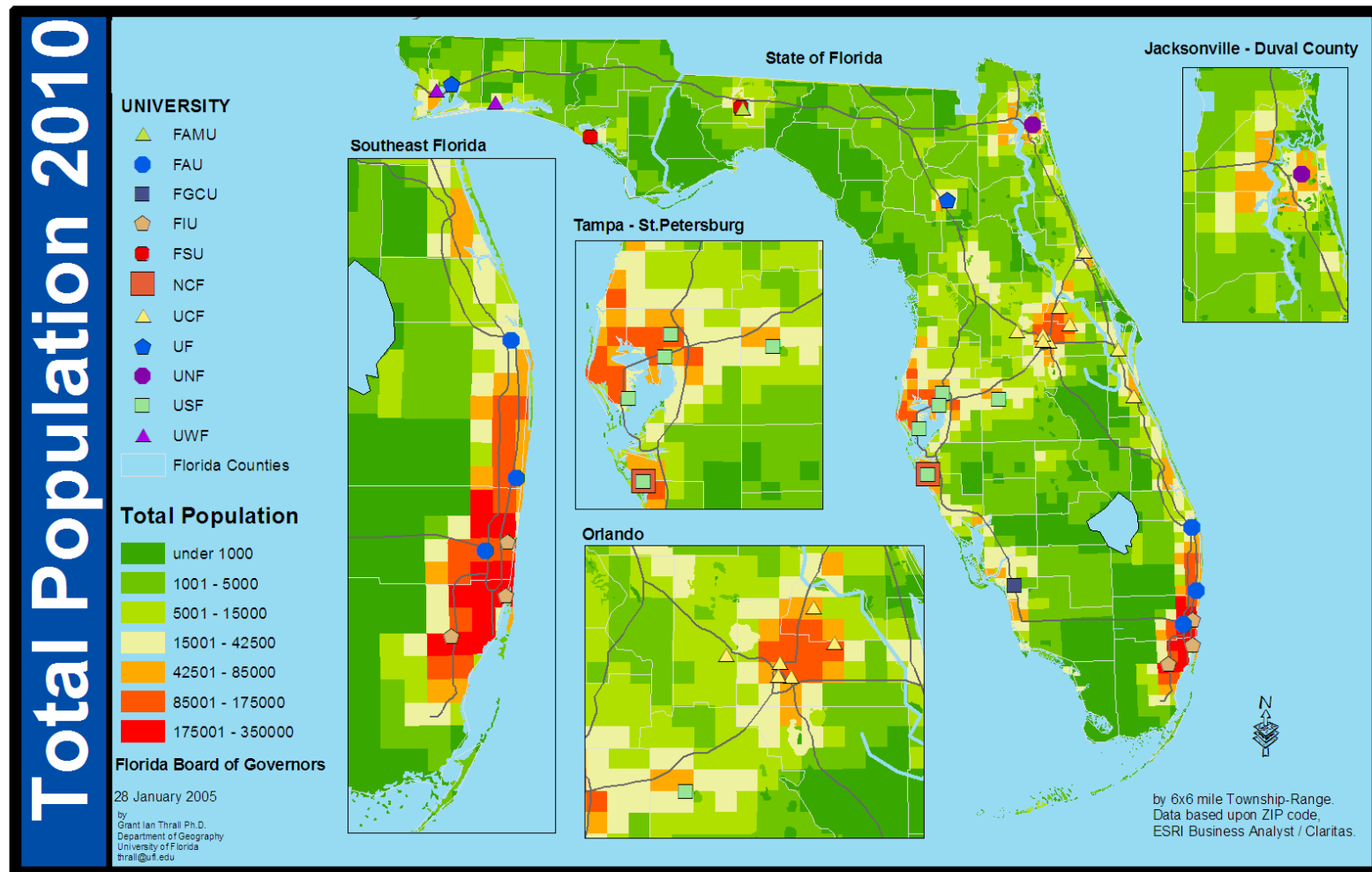
1. **Florida Population Growth Trends**
2. **State University System Locations and FTE**
3. **Measurements With Geographic Areas Of SUS Dominance**



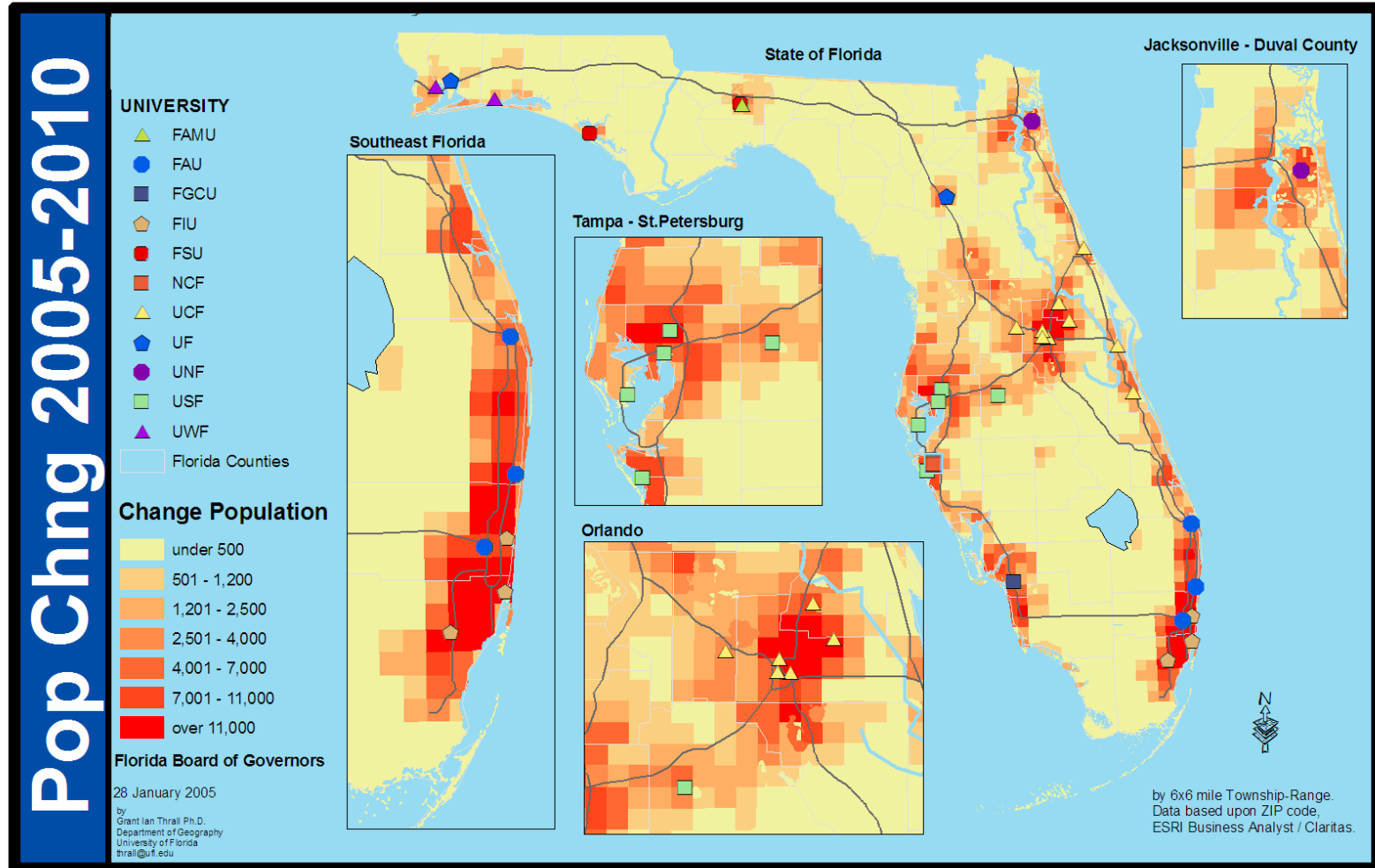
Part 1: Florida Population Growth Trends

Part 1

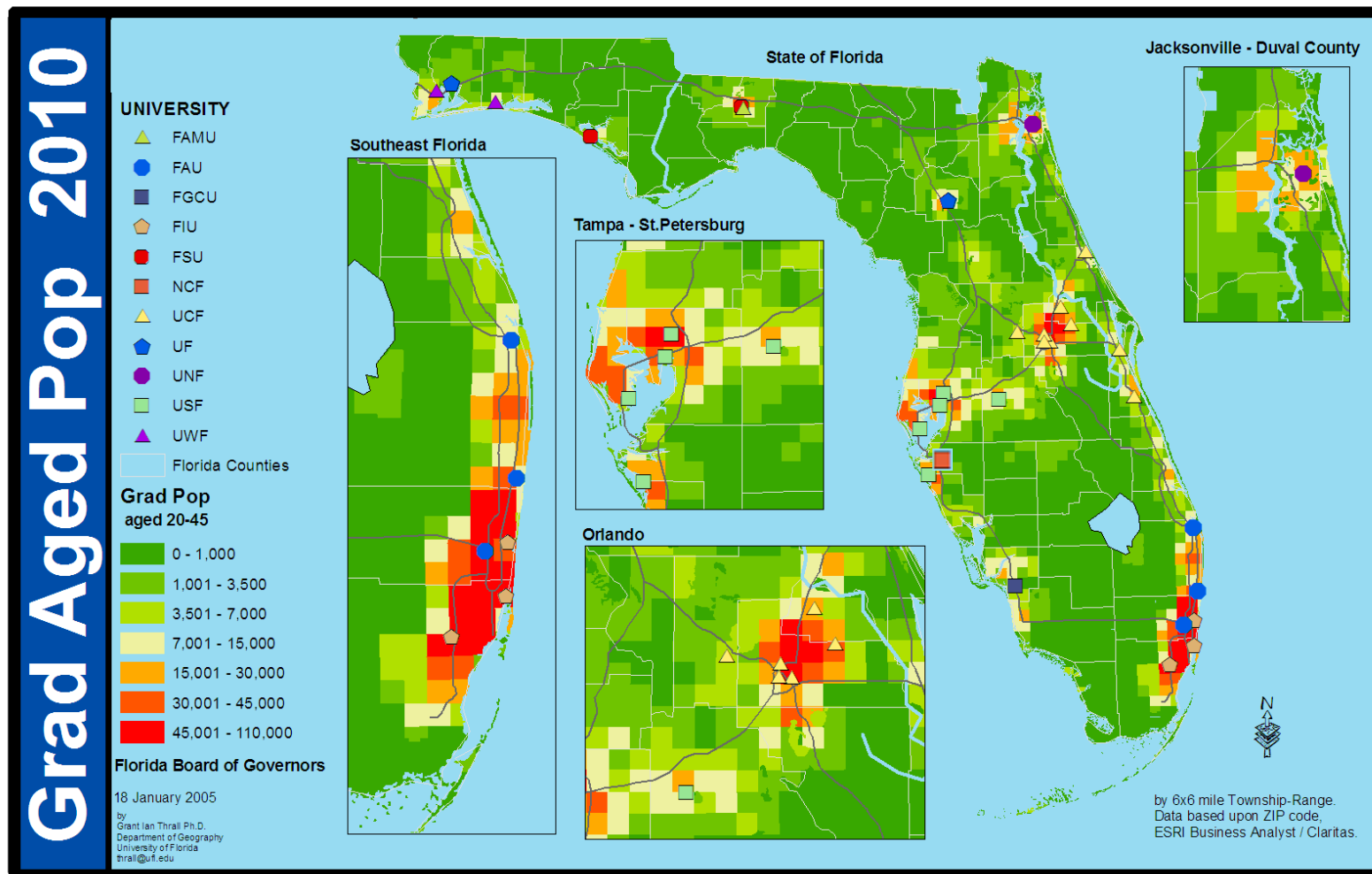
1.1a Total Population 2010



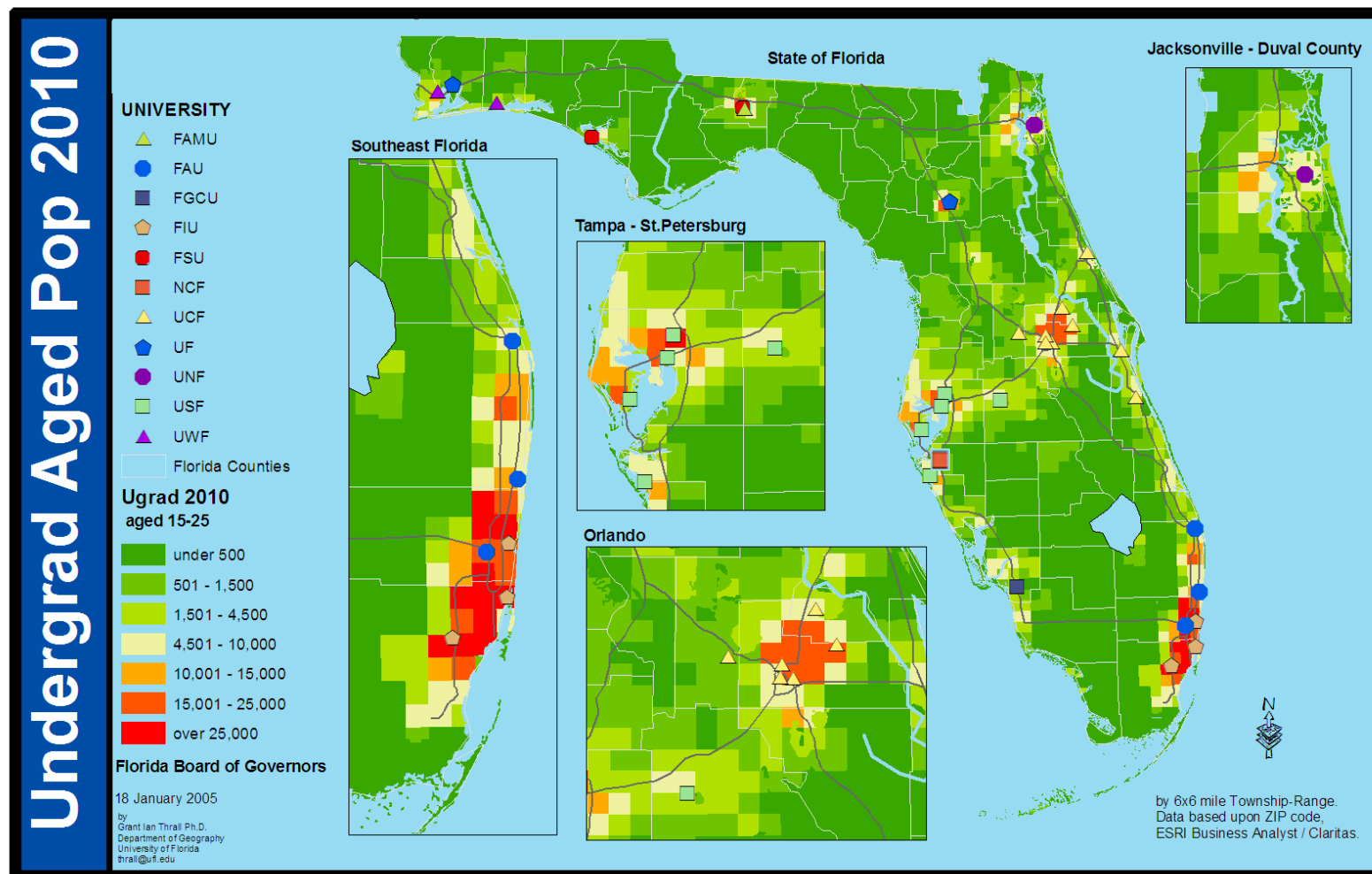
1.1b Change in Total Population 2005-2010



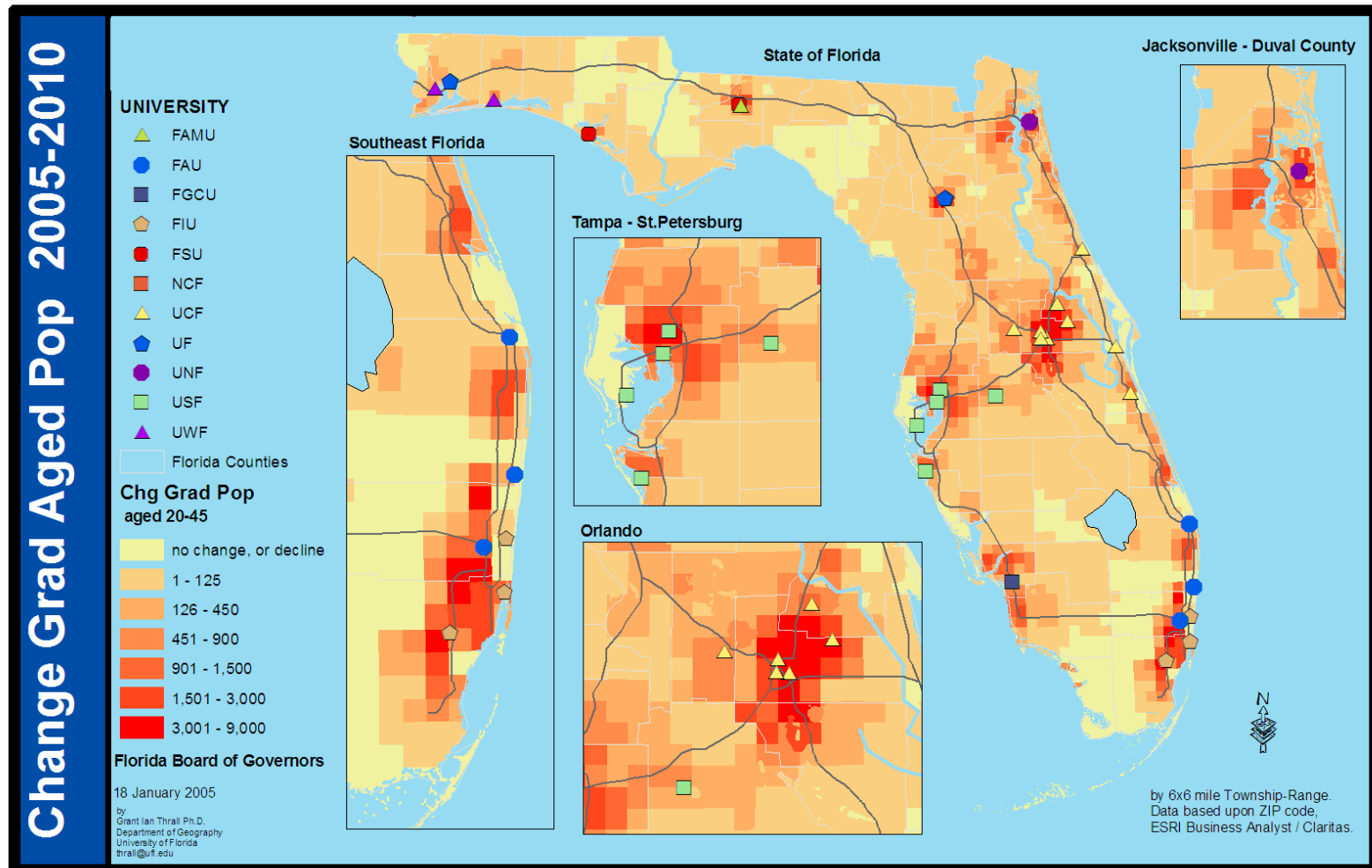
1.2a Graduate-Aged Population 2010 (20-45)



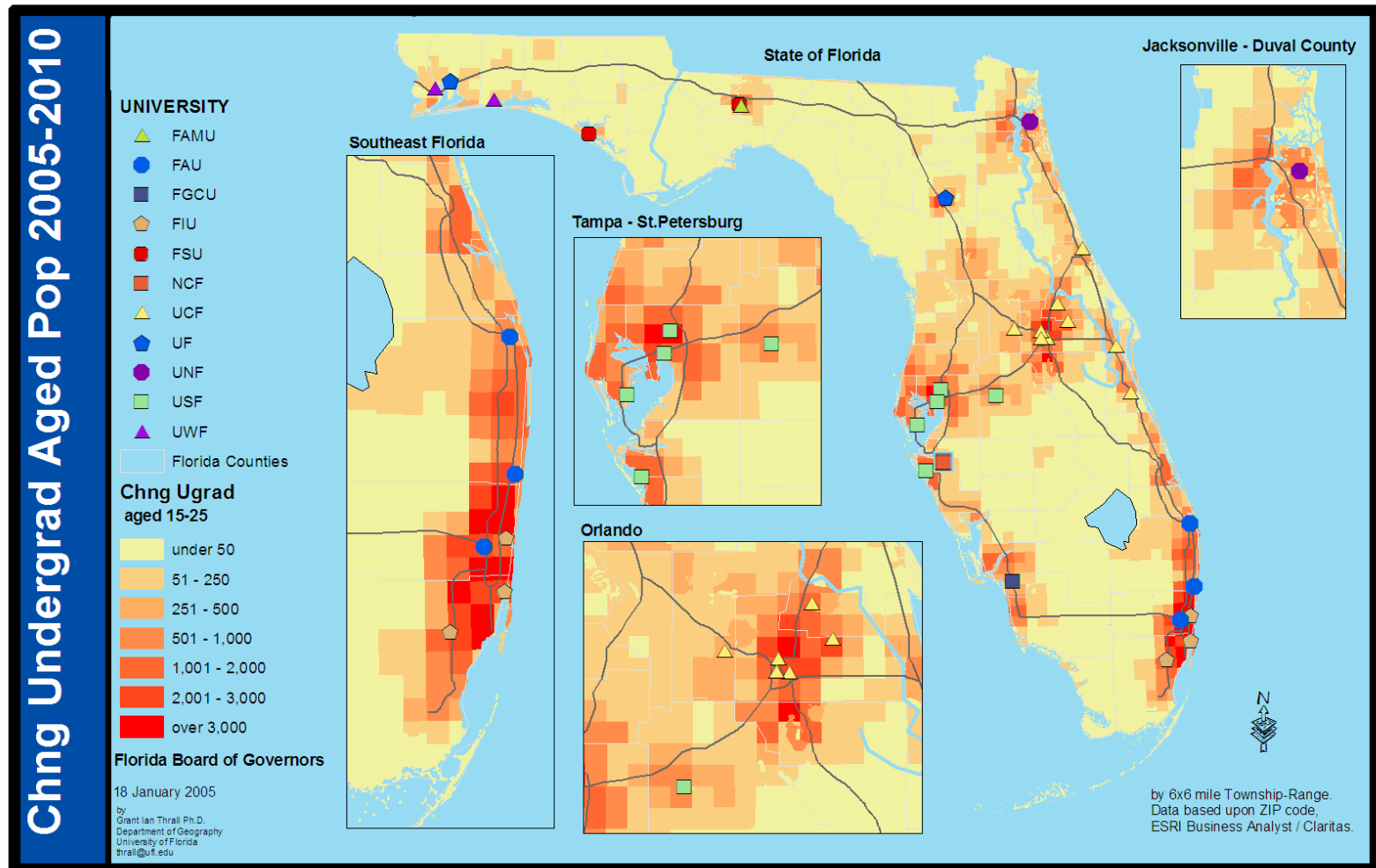
1.2b Undergraduate-Aged Population 2010 – (15-25)



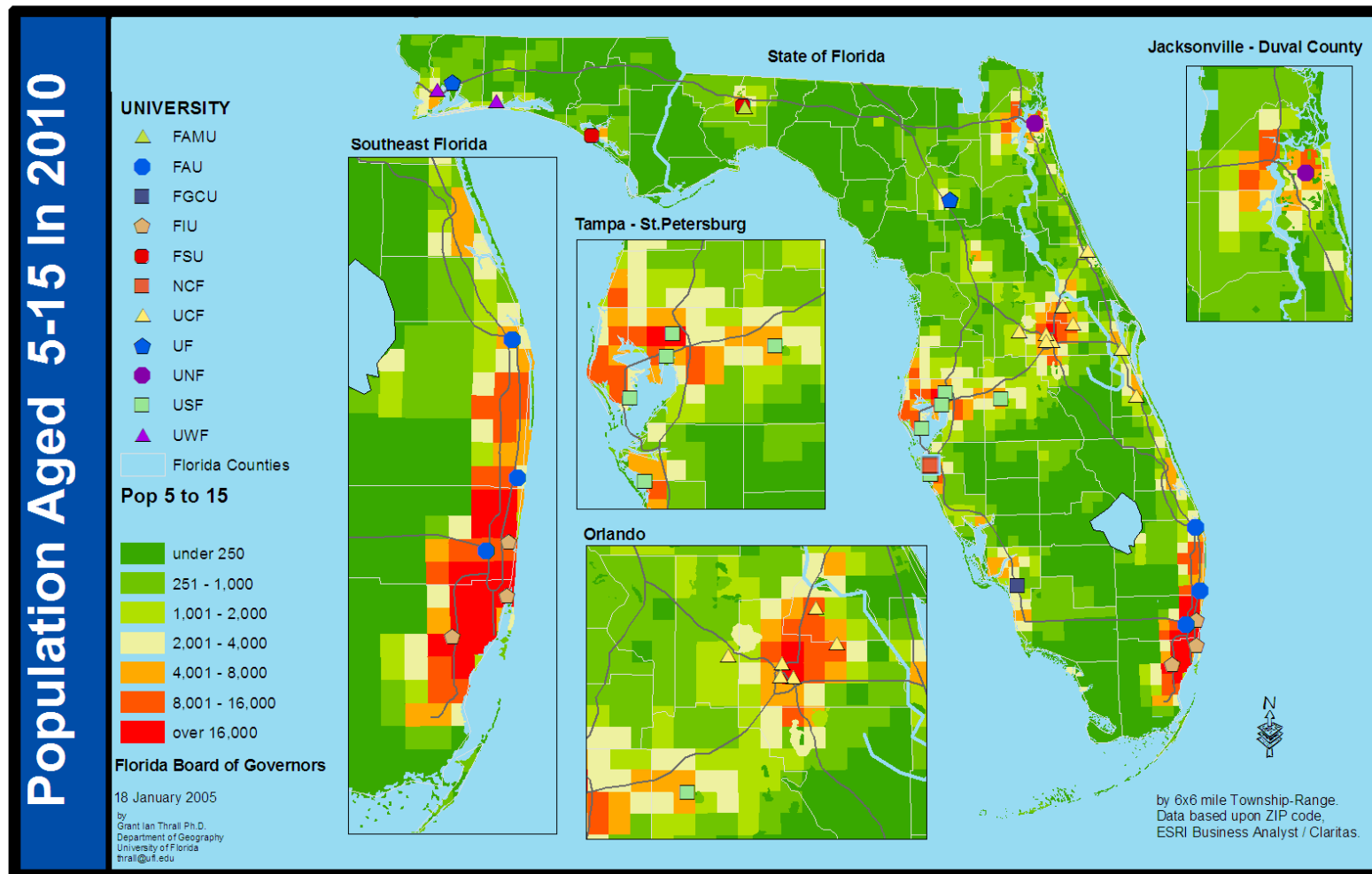
1.2c Change in Graduate-Aged Population 2005-2010 - (20-45)



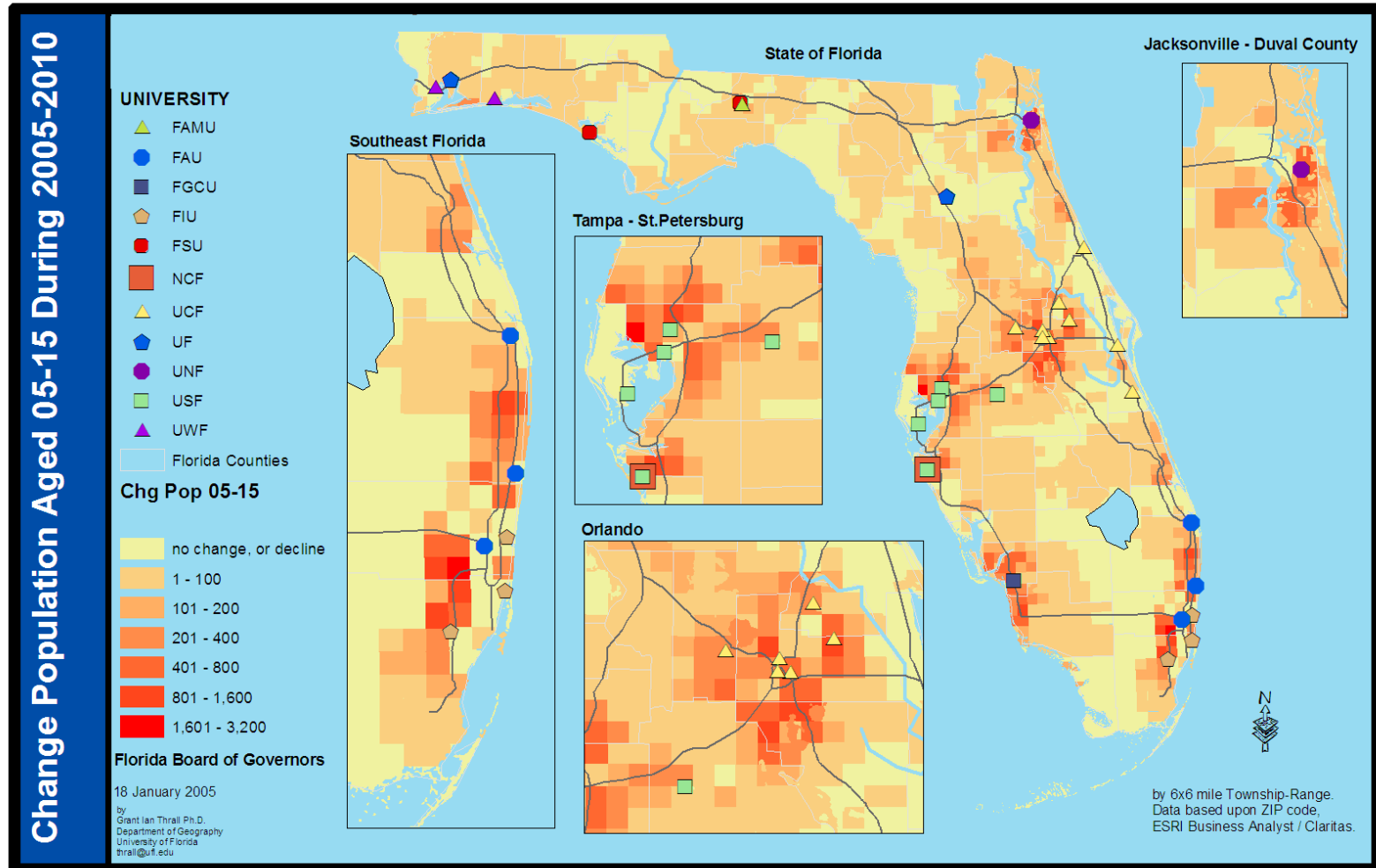
1.2d Change in Undergraduate-Aged Population 2005-2010 - (15-25)



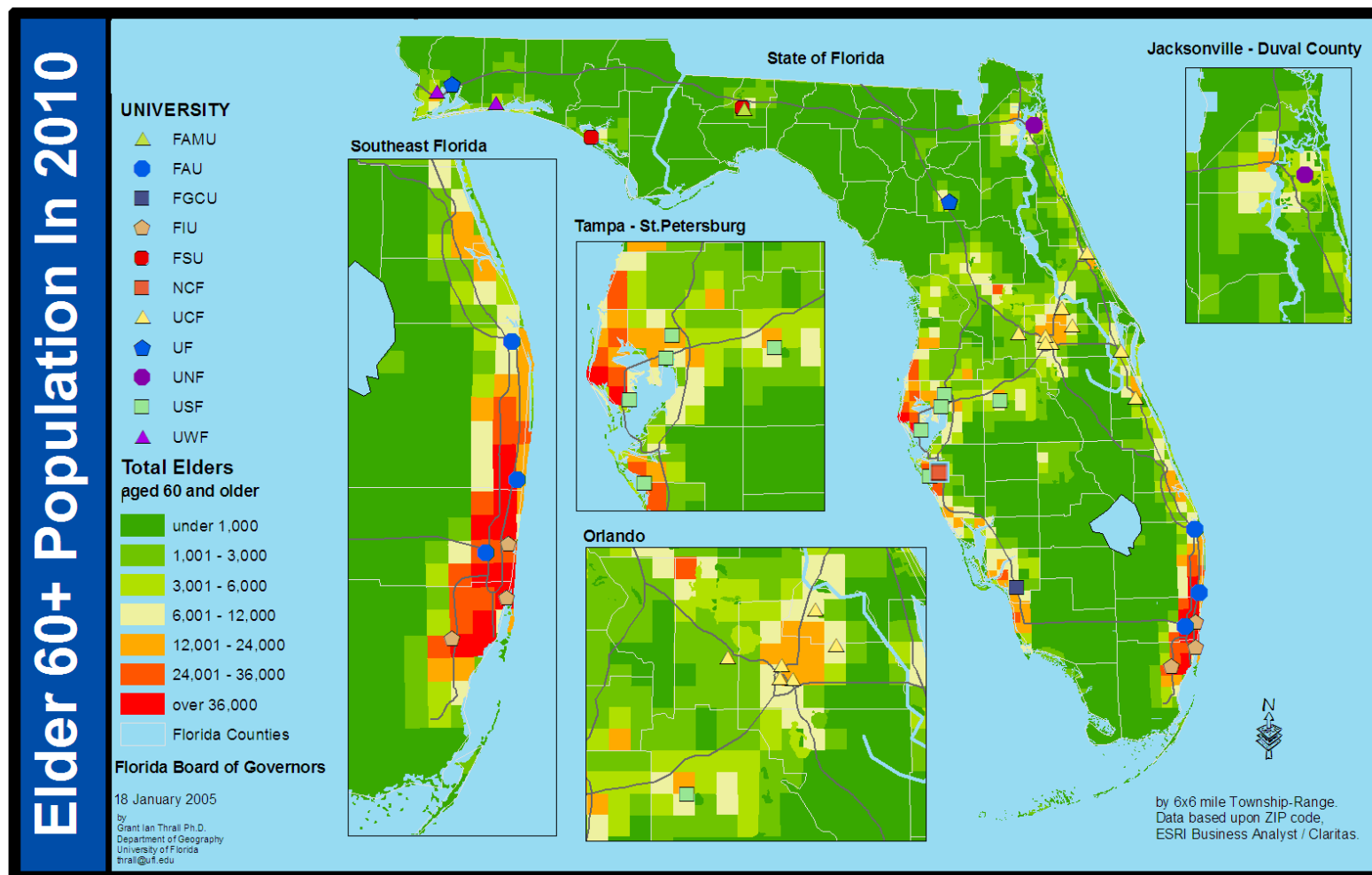
1.3a Population Aged 5-15 in 2010



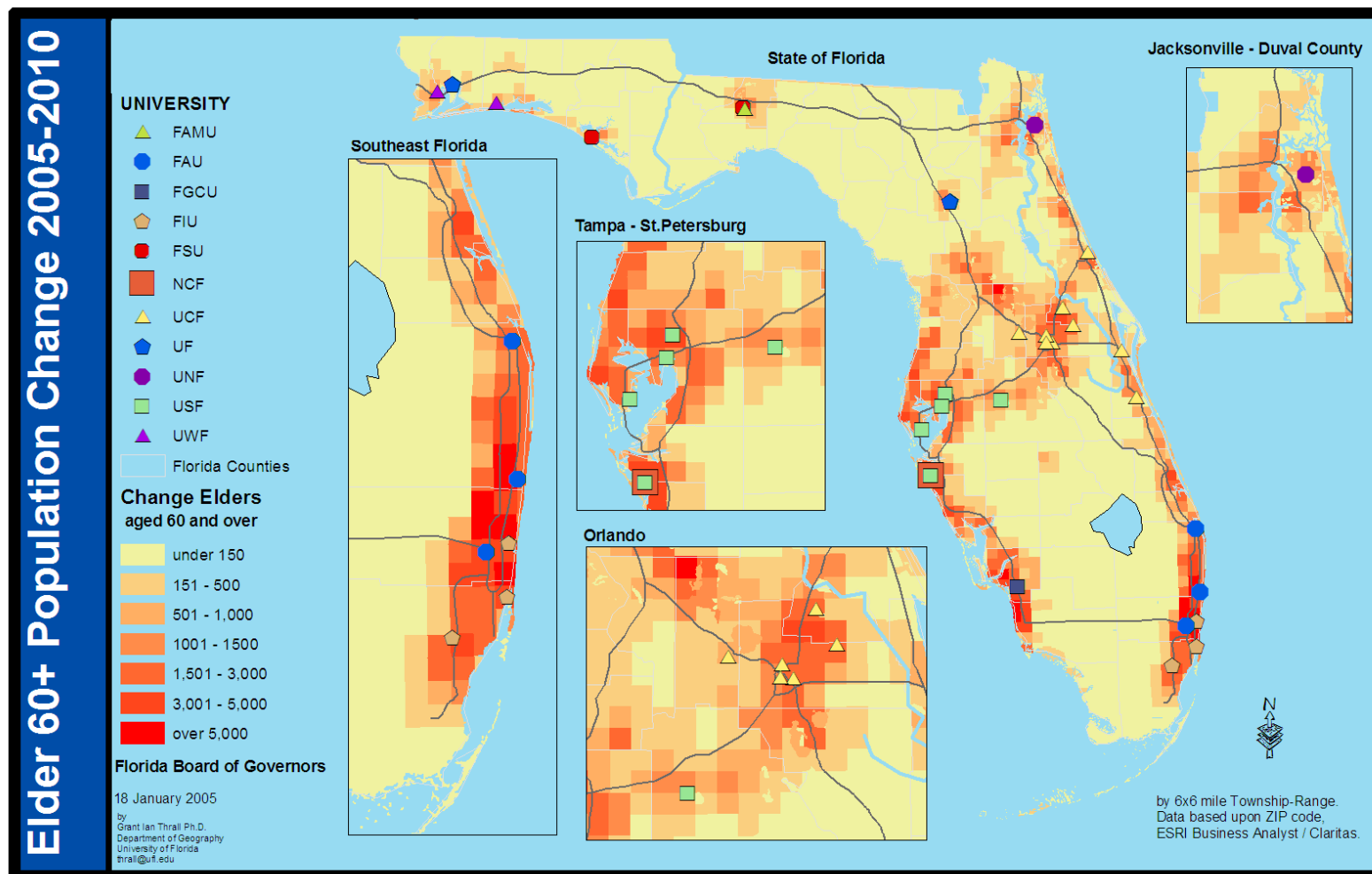
1.3b Change in Population Aged 5-15 During 2005-2010



1.4a Population Aged 60+ in 2010



1.4b Change in Population Aged 60+ 2005-2010

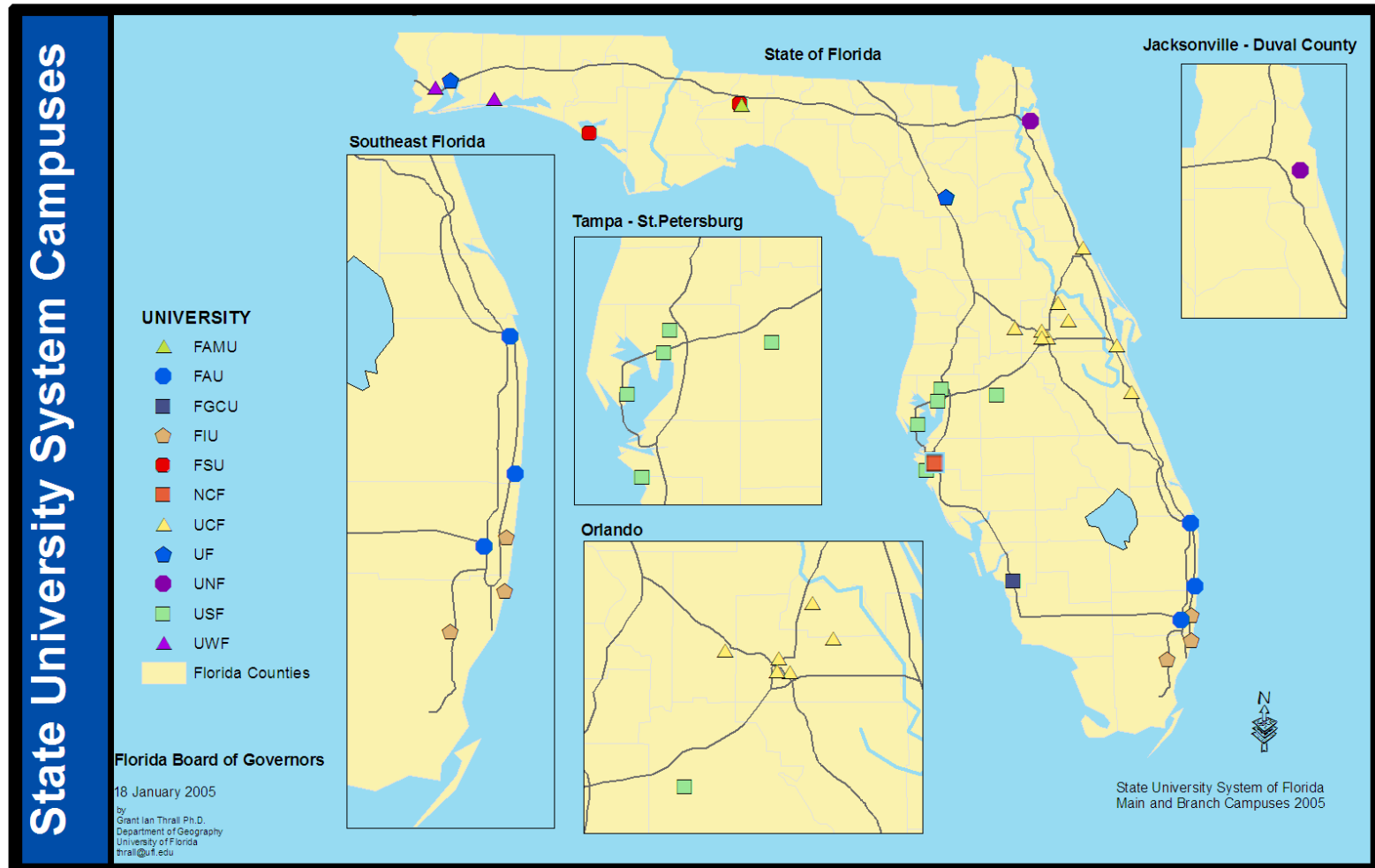


Part 2: State University System Locations and FTE

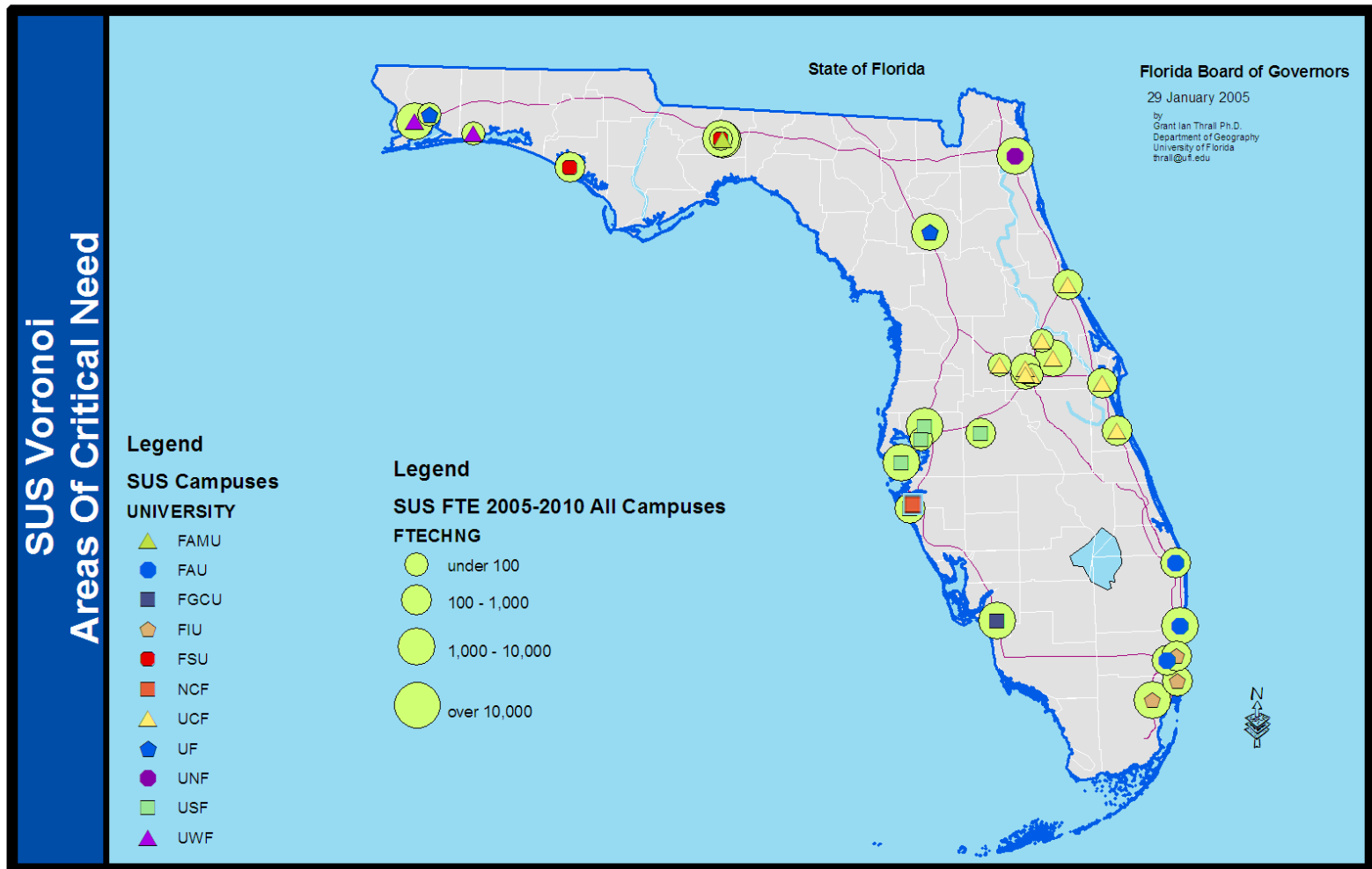
Part 2

2.1 State University System (SUS) Campuses

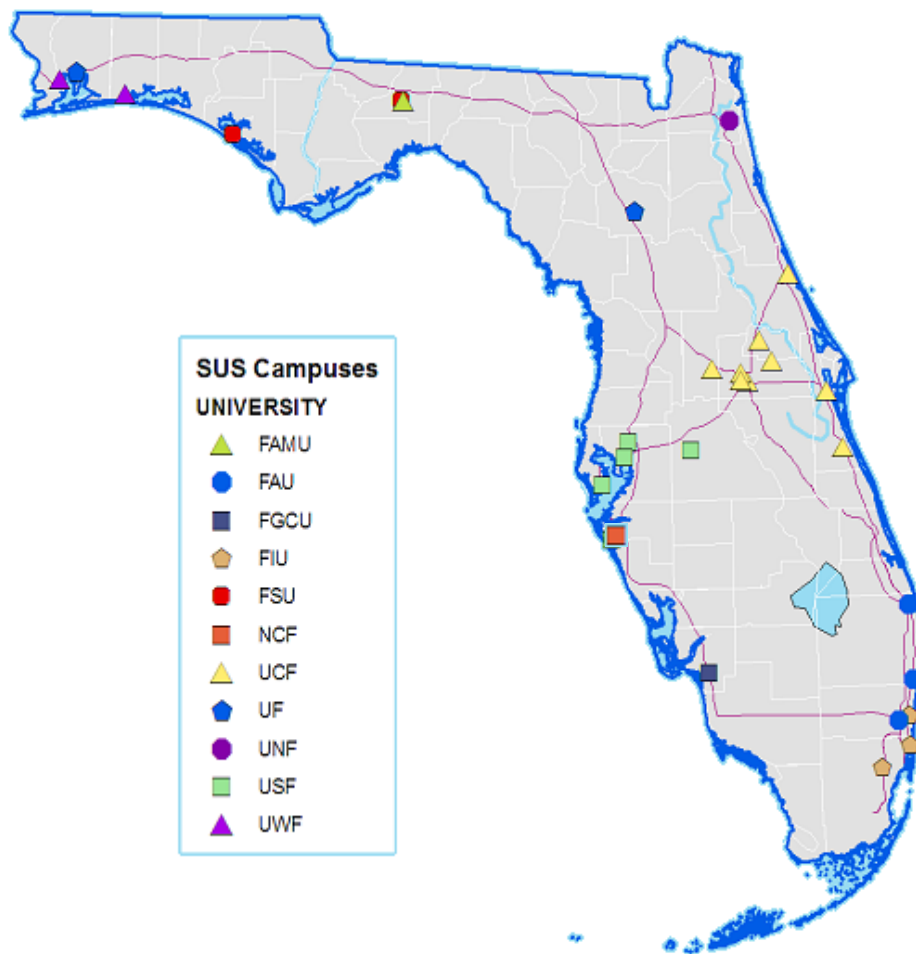
Main and branch campuses with current or planned enrollments submitted to the Board of Governors as of June 2004



2.2b SUS Campus FTE Change 2005-2010



2.2b continued Table: SUS Campus FTE Change 2005-2010



UNIVERSITY	BRANCH	FTE2010	FTECHNG
FAMU	MAIN	11232	2381
FAU	MAIN	11951	1086
FAU	BROWARD	2805	422
FAU	NORTHERN	1771	383
FGCU	MAIN	50	6135
FIU	NORTHERN MIAMI	4327	574
FIU	MAIN	25859	7309
FIU	FT. LAUDERDALE	594	168
FSU	ABROAD	31	3
FSU	MAIN	27260	1930
FSU	PANAMA CITY	1106	463
NCF	MAIN	757	149
UCF	PALM BAY	213	213
UCF	DAYTONA	1506	325
UCF	LAKE MARY	0	0
UCF	SOUTH ORLANDO	0	0
UCF	METRO WEST	410	410
UCF	MAIN	27720	3331
UCF	ROSEN COLLEGE	1395	639
UCF	BREVARD/COCOA	1232	122
UCF	SOUTH LAKE	323	-221
UF	EGLIN	29	0
UF	MAIN	35340	2623
UNF	MAIN	11673	2438
USF	MAIN	30628	7775
USF	ST. PETERSBURG	3419	1311
USF	PORT AUTHORITY	0	0
USF	LAKELAND	1393	782
USF	SARASOTA	1366	503
UWF	MAIN	6972	1596
UWF	FT. WALTON BEACH	532	74

Part 3: Measurements with Geographic Areas of SUS Dominance

Part 3

3.1a High Schools with High Percentage of College-Bound Graduates Attending a Single SUS Campus

If 40% or more of SUS-bound graduates attend a single institution, high school is marked with the icon of that institution. Does not show high schools where there is no distinct preference for a single SUS campus

High Schools With Dominant SUS Campus

Florida Board of Governors

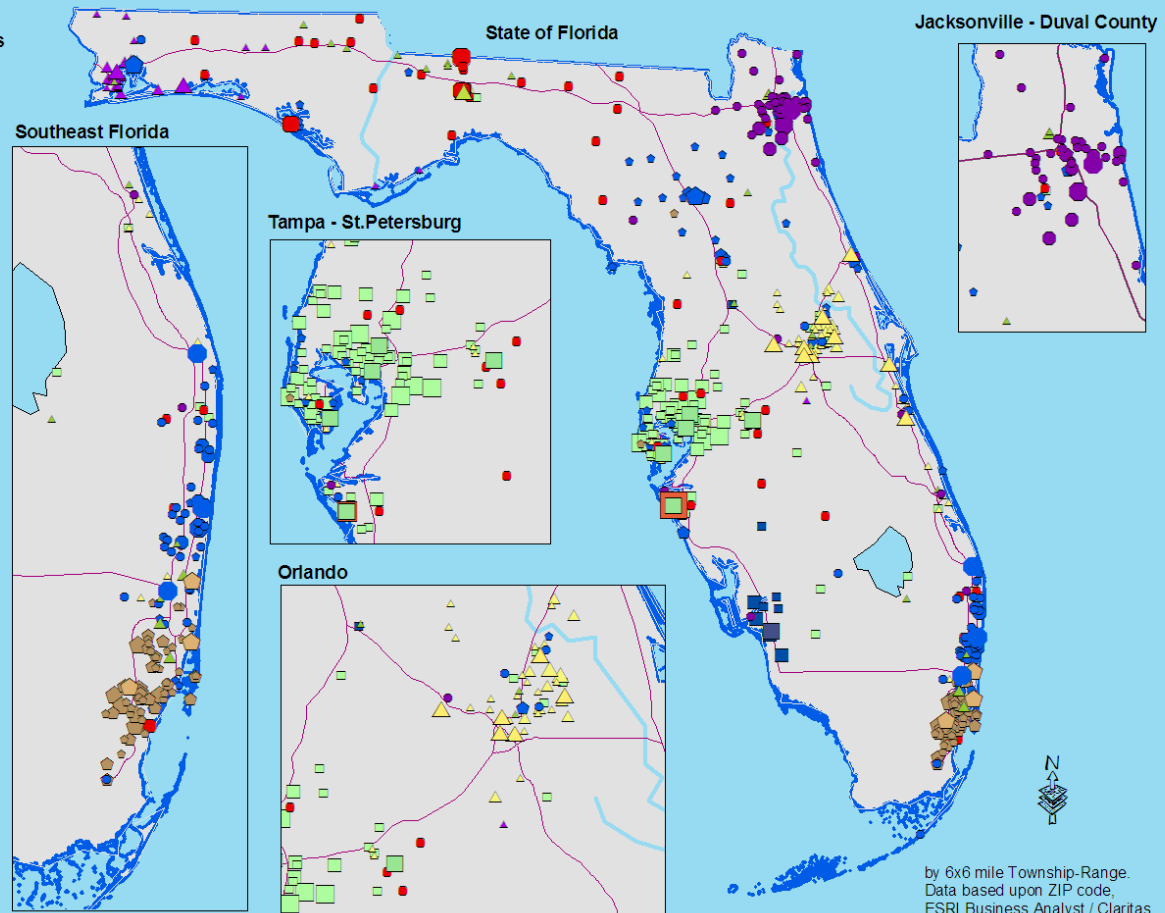
08 February 2005

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SUS Campuses

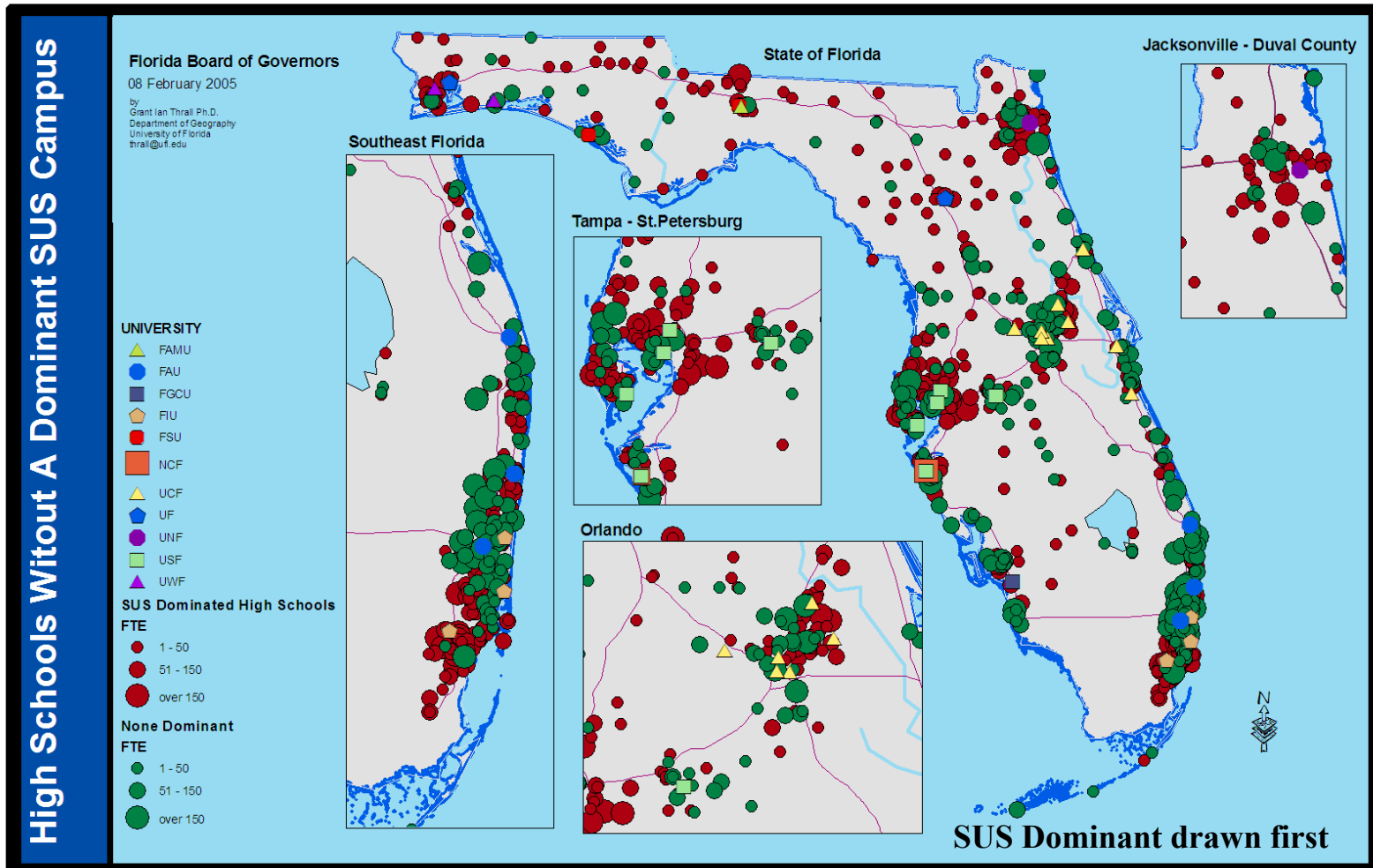
UNIVERSITY

- ▲ FAMU
- FAU
- FGCU
- ◆ FIU
- FSU
- NCF
- ▲ UCF
- ◆ UF
- UNF
- USF
- ▲ UWF



3.1b Florida High Schools with and without a Primary SUS Institution

Green dots show high schools with no distinct preference for a single SUS institution. Red dots show high schools tied to a single institution (same high schools as previous slide).



3.2 University Trade Areas

One method in for calculating the trade area for retailer is by rings showing the percentage of customers within the ring. The primary trade ar is generally considered to contain 80% of the customers.

It is best to calculate the trade area using the latitude longitude coordinates of each customer. See map at right.

Data depicted on the right was used to calculate UF's trade area, for the Registrar and President Offices at University of Florida. The report is available at

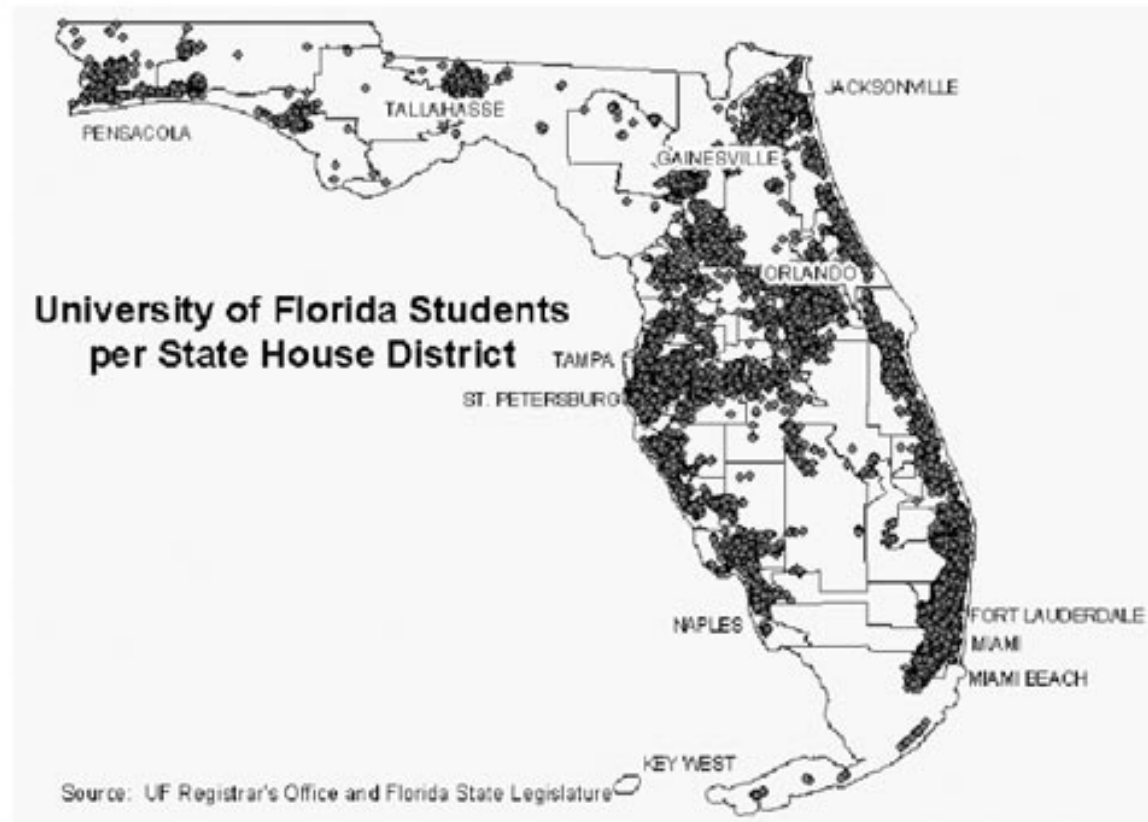
PDF version

<http://www.clas.ufl.edu/users/thrall/research/uf/rall-mecoli.pdf>

HTML version

<http://www.geospatial-online.com/geospatialsolutions/article/articleDet.jsp?id=61493>

A map of UF's trade area based upon these actual students' permanent addresses follows.



3.2 University Trade Areas

UF students' permanent addresses were used to calculate geographic coordinates. The 80% "trade area" of UF was then calculated and shown at the right.

In the following maps, "Trade areas" of SUS campuses were calculated using the locations of high schools, and which – if any – SUS campus dominated that high school in terms of students matriculating to an SUS campus.

Each high school is a point in the calculation weighted by the number of students sent to the dominant SUS campus.

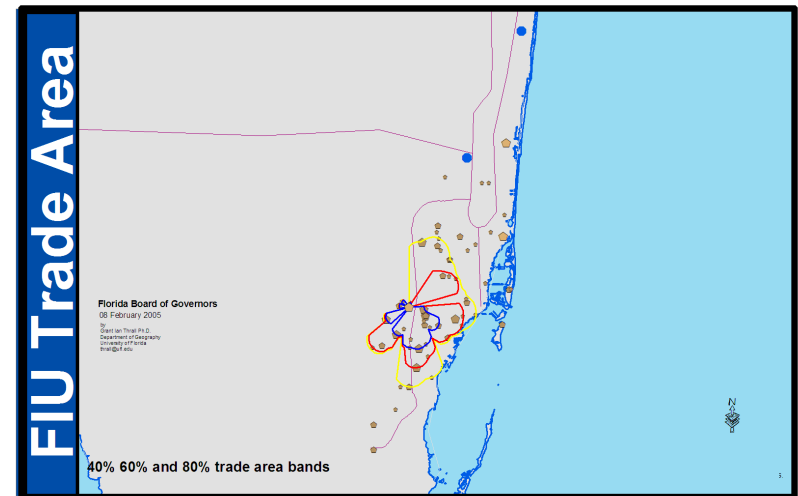
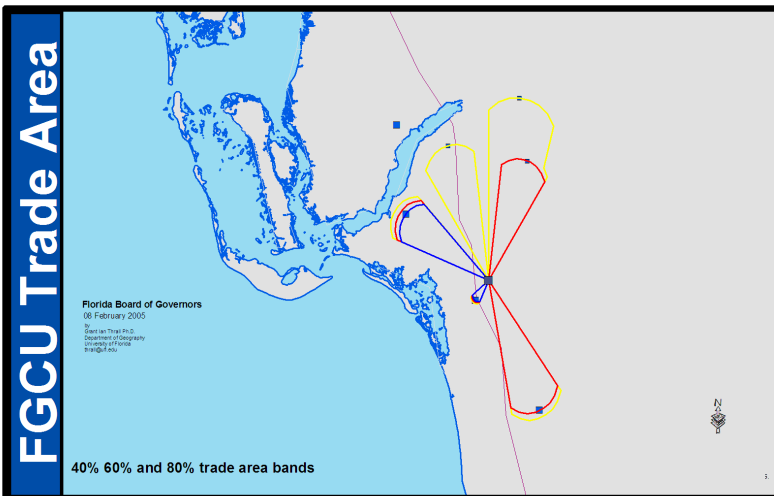
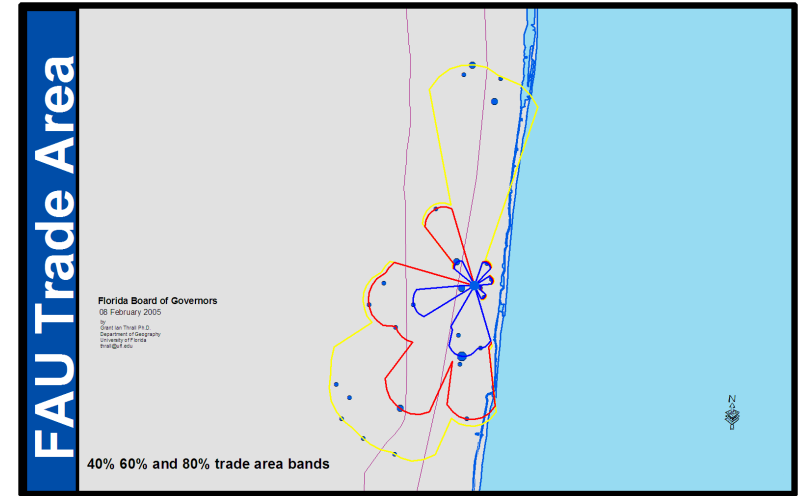
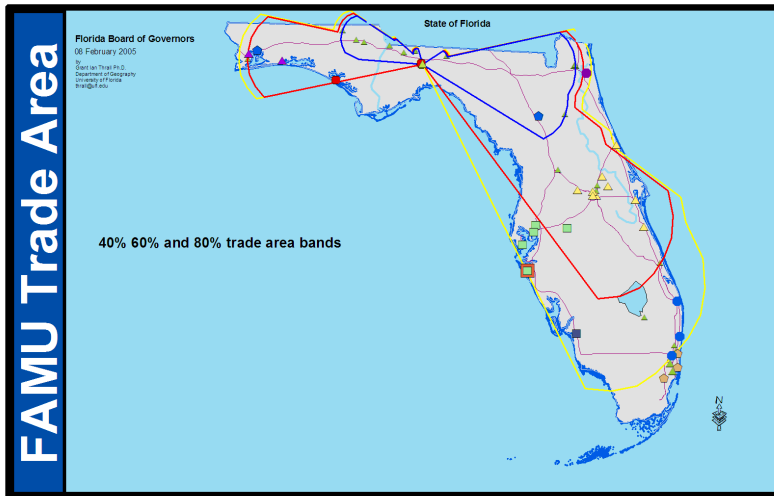
It is important to recognize that the method used to calculate the following maps is not as accurate as executed for UF and shown on the right. The method used here results in a compressed trade area.

The value of the trade area maps included here is documentation that several campuses like UF and FSU affect large geographic areas, while other campuses are more local in attracting students.

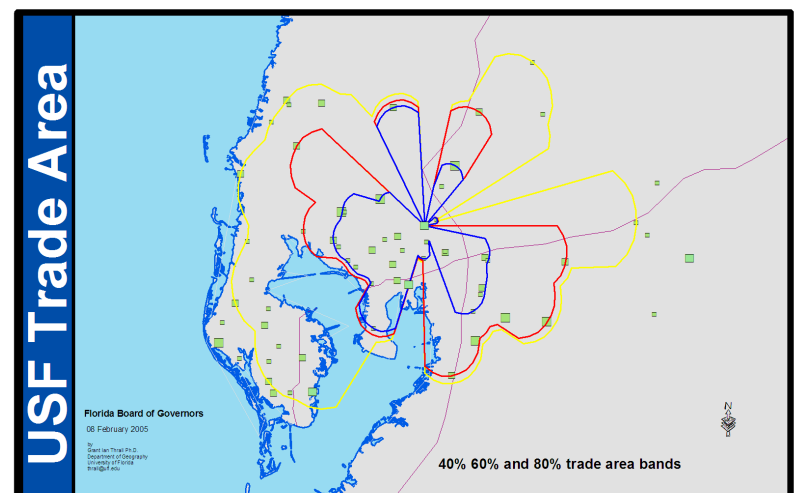
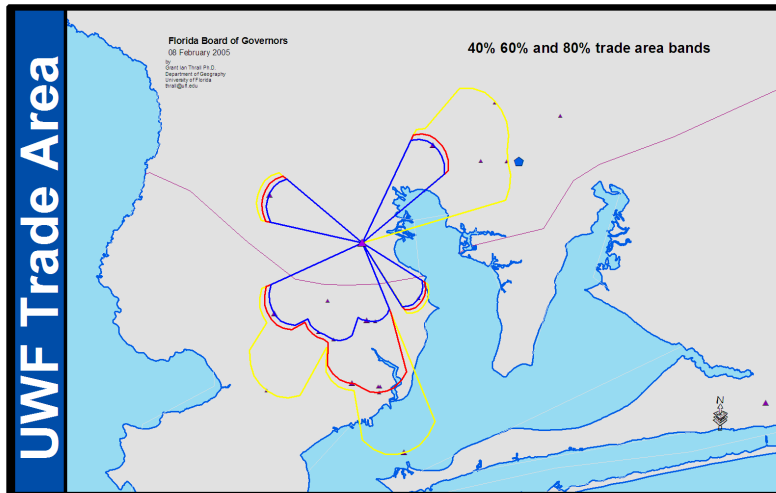
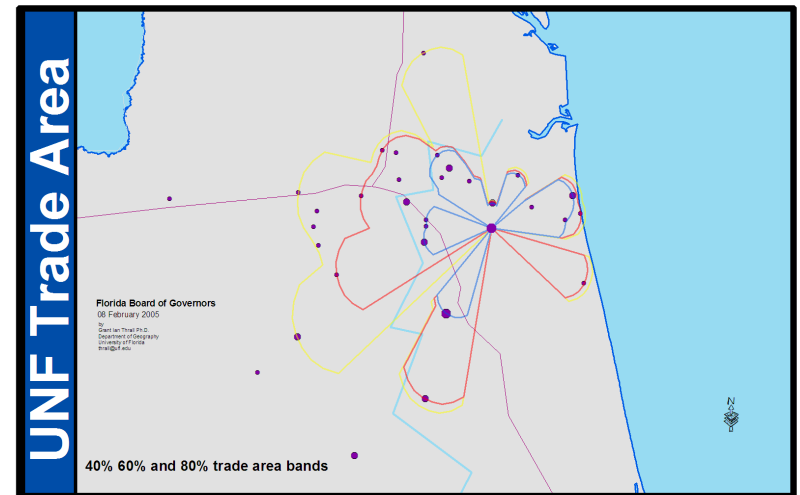
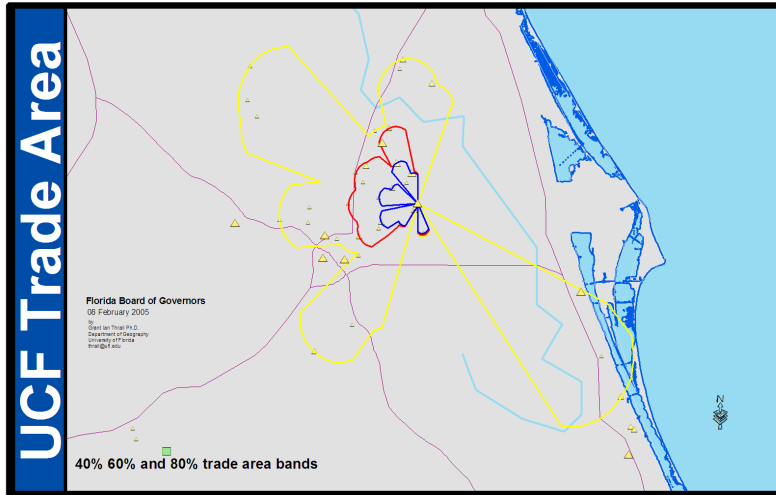


UF "trade area" calculated using UF students' actual permanent addresses. From Grant Thrall and Noelle Mecoli, 2003, "Spatial Analysis, Political Support, and Higher Education Funding," *GeoSpatial Solutions*, 13(7): 44-47.

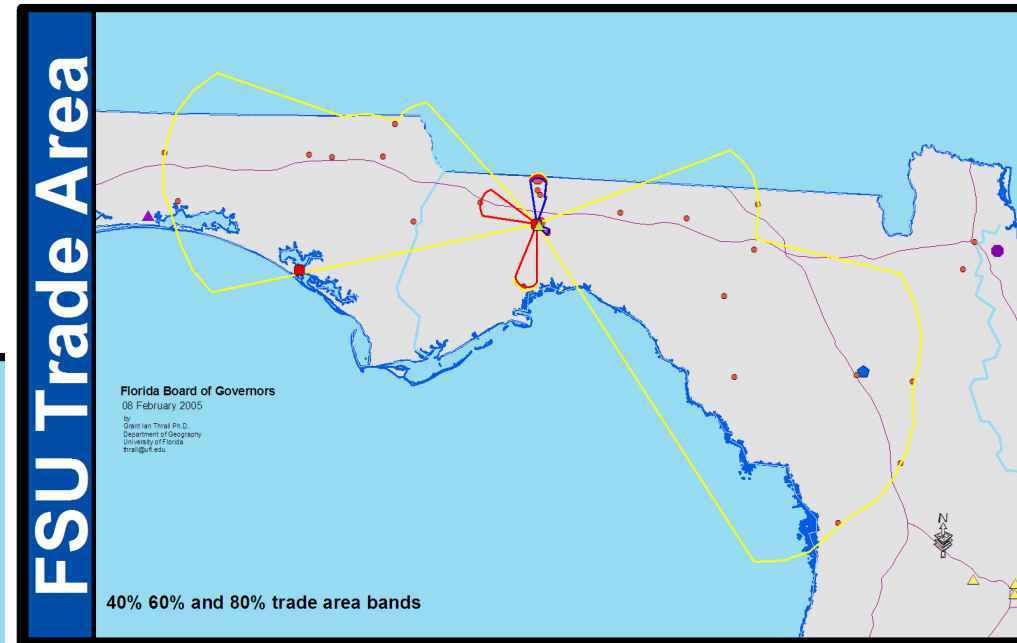
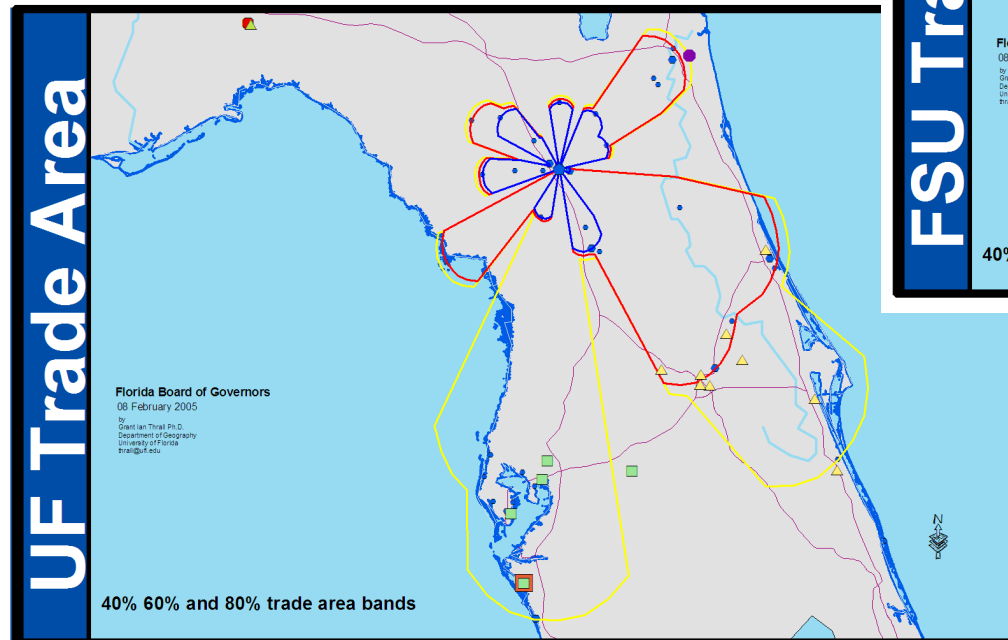
3.2a SUS 40% 60% 80% Trade Areas for High Schools with Single-SUS Preference— FAMU, FGCU, FIU, FAU



3.2b SUS 40% 60% 80% Trade Areas for High Schools with Single-SUS Preference – UCF, UWF, UNF, USF

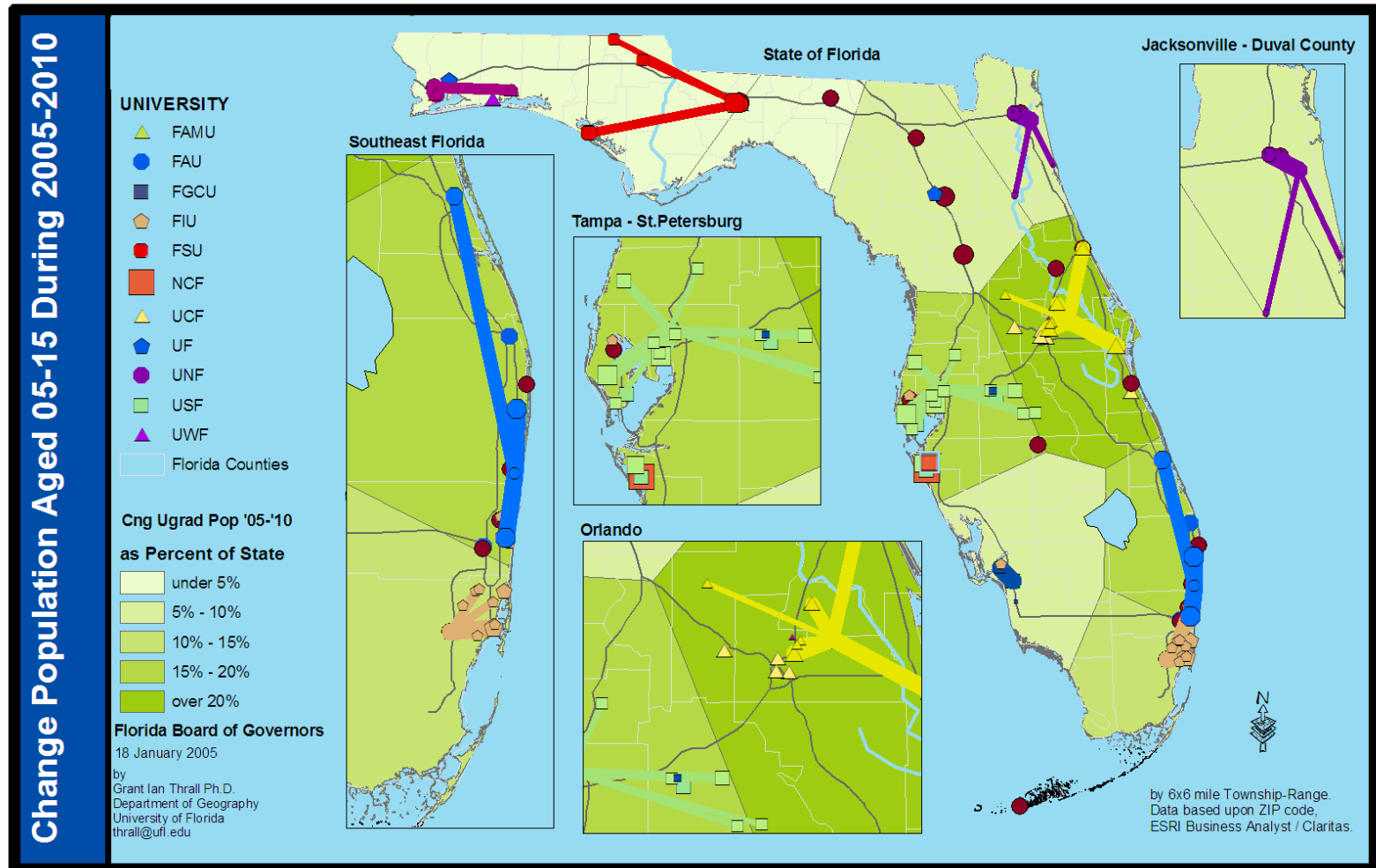


3.2c SUS 40% 60% 80% Trade Areas for High Schools with Single-SUS Preference – UF, FSU



3.3 Private & Community College Transfers to SUS Campuses with Change in Undergraduate Population 2005-2010

Community Colleges and Private Colleges whose Transfer Students Tend to go to a Single SUS Institution are Linked by a Line. Community and Private Colleges with SUS-Transfer Students but No Distinct SUS Preference are Noted by Red Dots Proportional to Number of Transfers.



Contents of Part 3.4 Areas of Geographic Proximity

Part 3.4

Explanation of Method for Calculation of Areas of Geographic Proximity

Voronoi Diagram

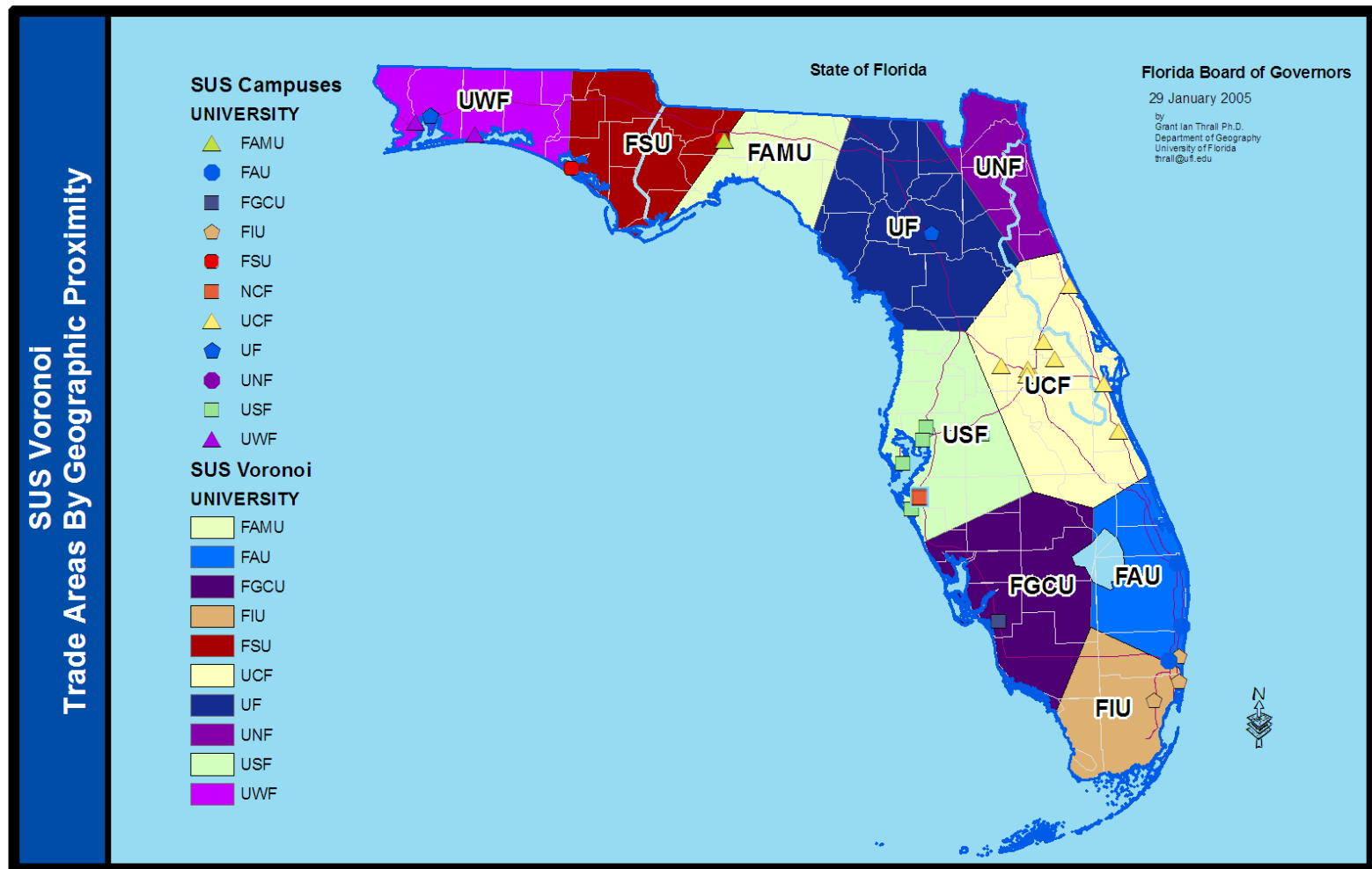
The Voronoi diagram has the property that for each site, every point in the region around that site is closer to that site than to any of the other sites.

The Delaunay triangulation is the geometric dual of the Voronoi diagram. This computational geometry method is standard as a first approximation of trade areas based upon the principle of “distance minimization” between origin and destination.

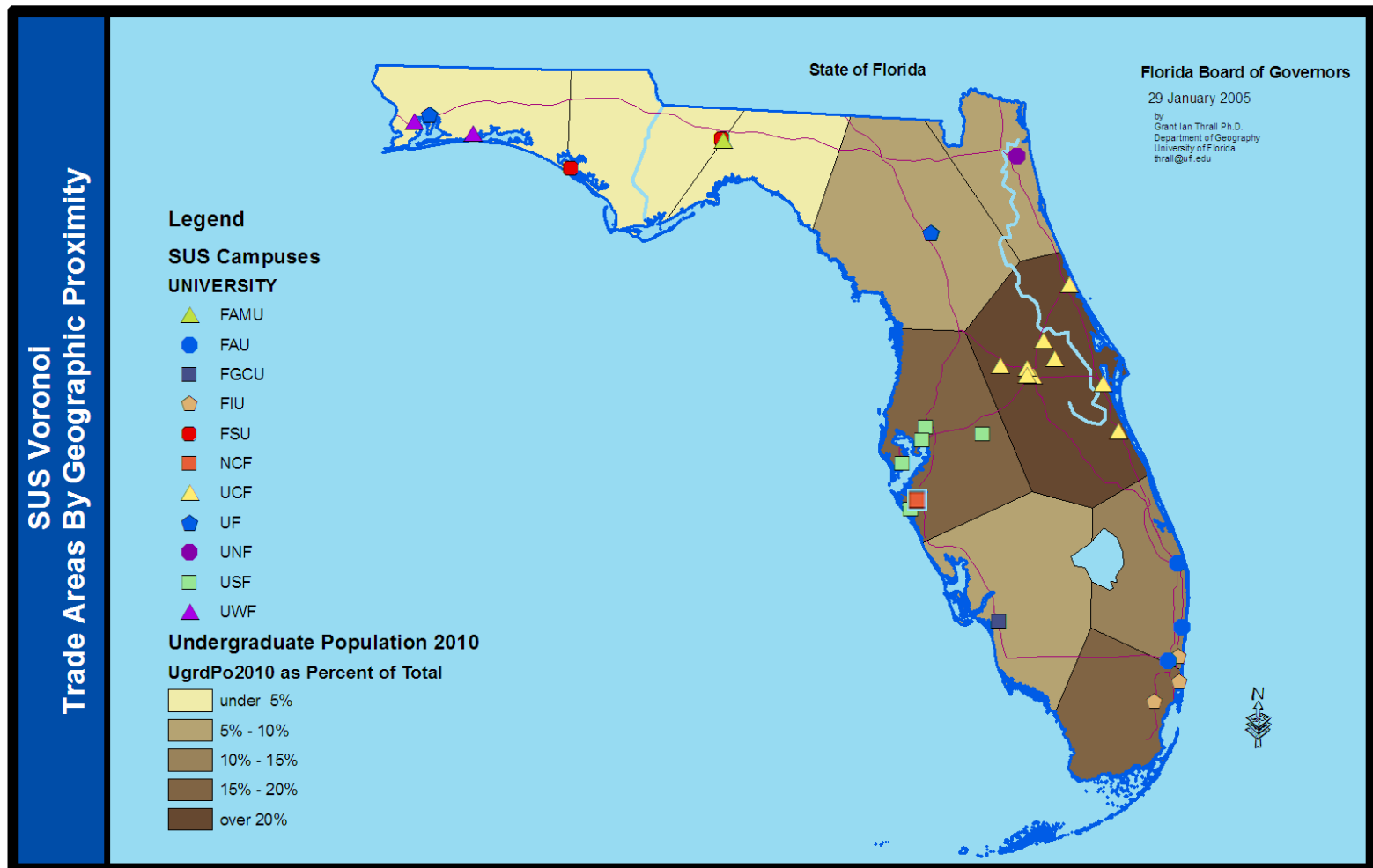
For an example of the Voronoi diagram and Delaunay triangulation, see

<http://www.cs.cornell.edu/Info/People/chew/Delaunay.html>

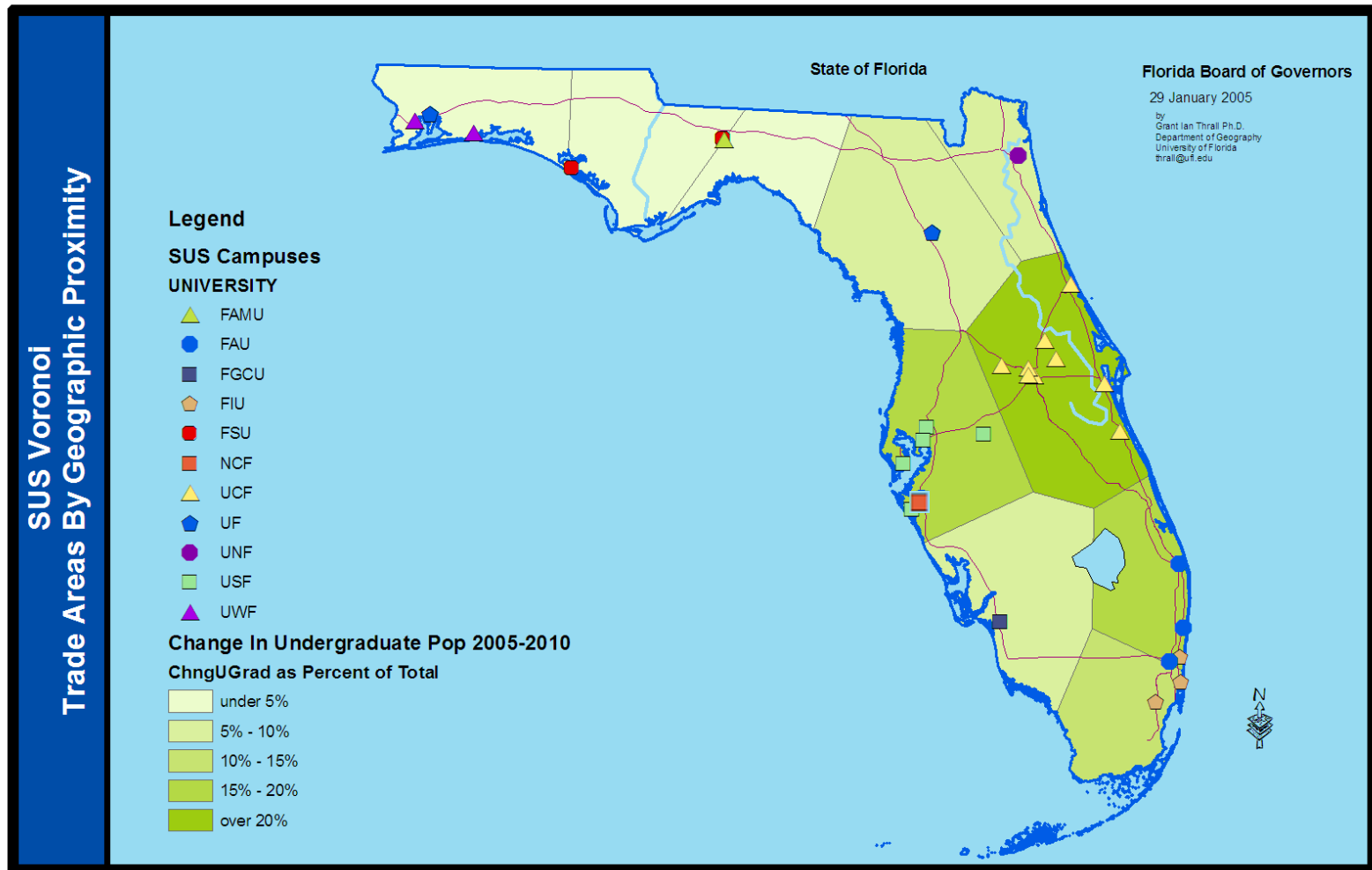
3.4a SUS Main Campus Trade Area Voronoi – (Areas Closer to One Institution's Main Campus than Any Other Main Campus)



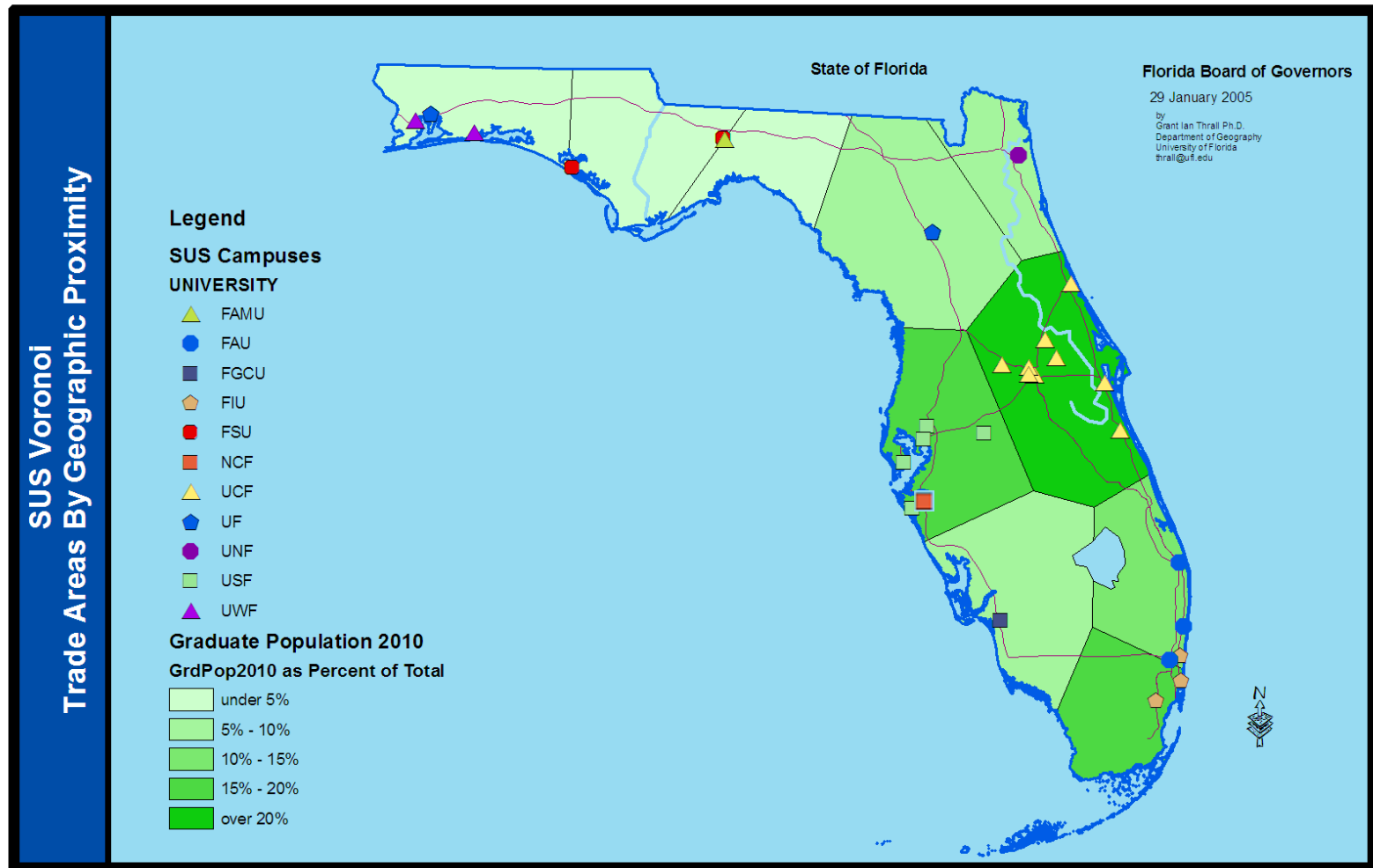
3.4b Total Undergraduate Population 2010 by SUS Trade Area



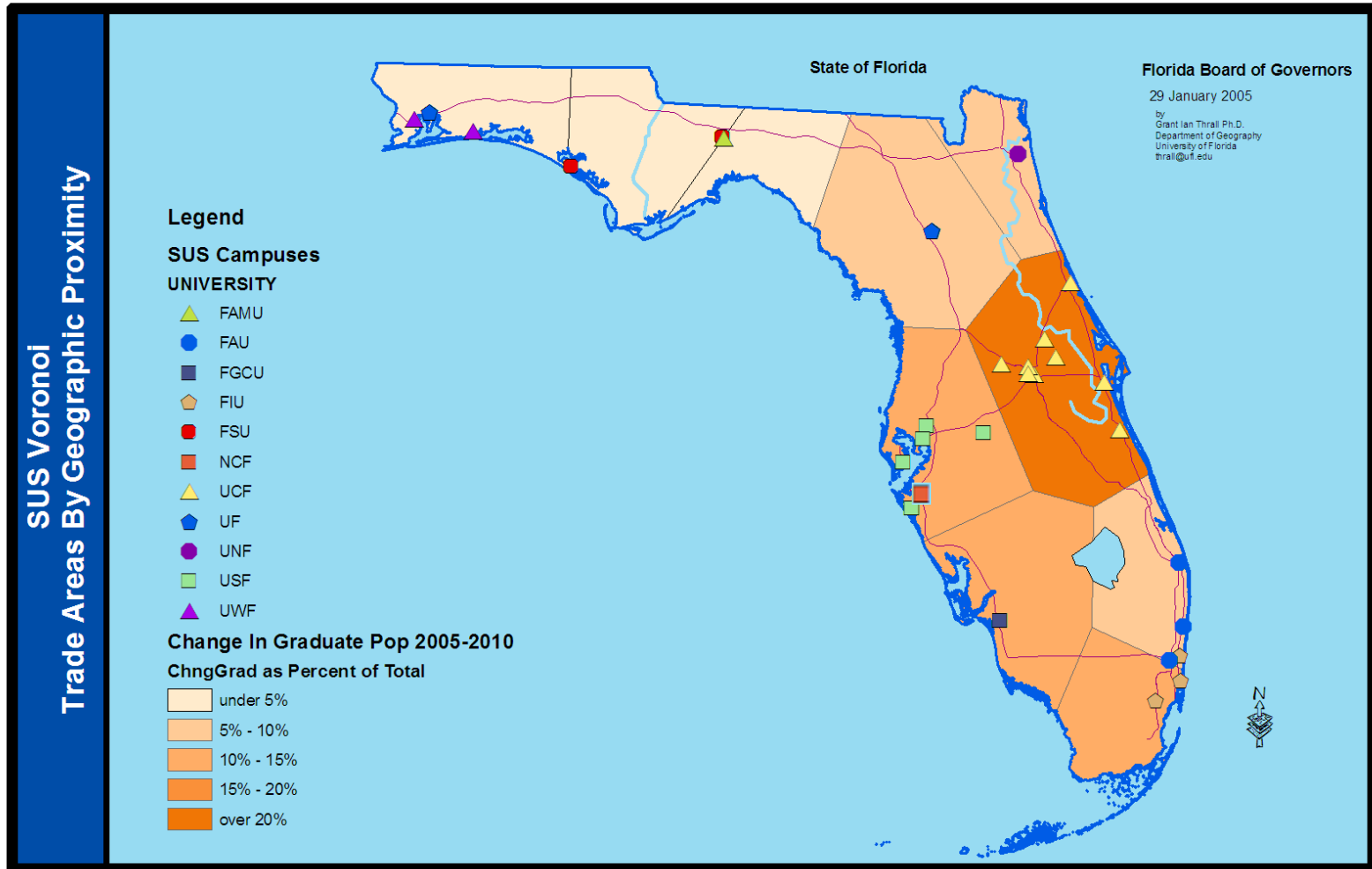
3.4c Change in Undergraduate Population 2005-2010 by SUS Trade Area



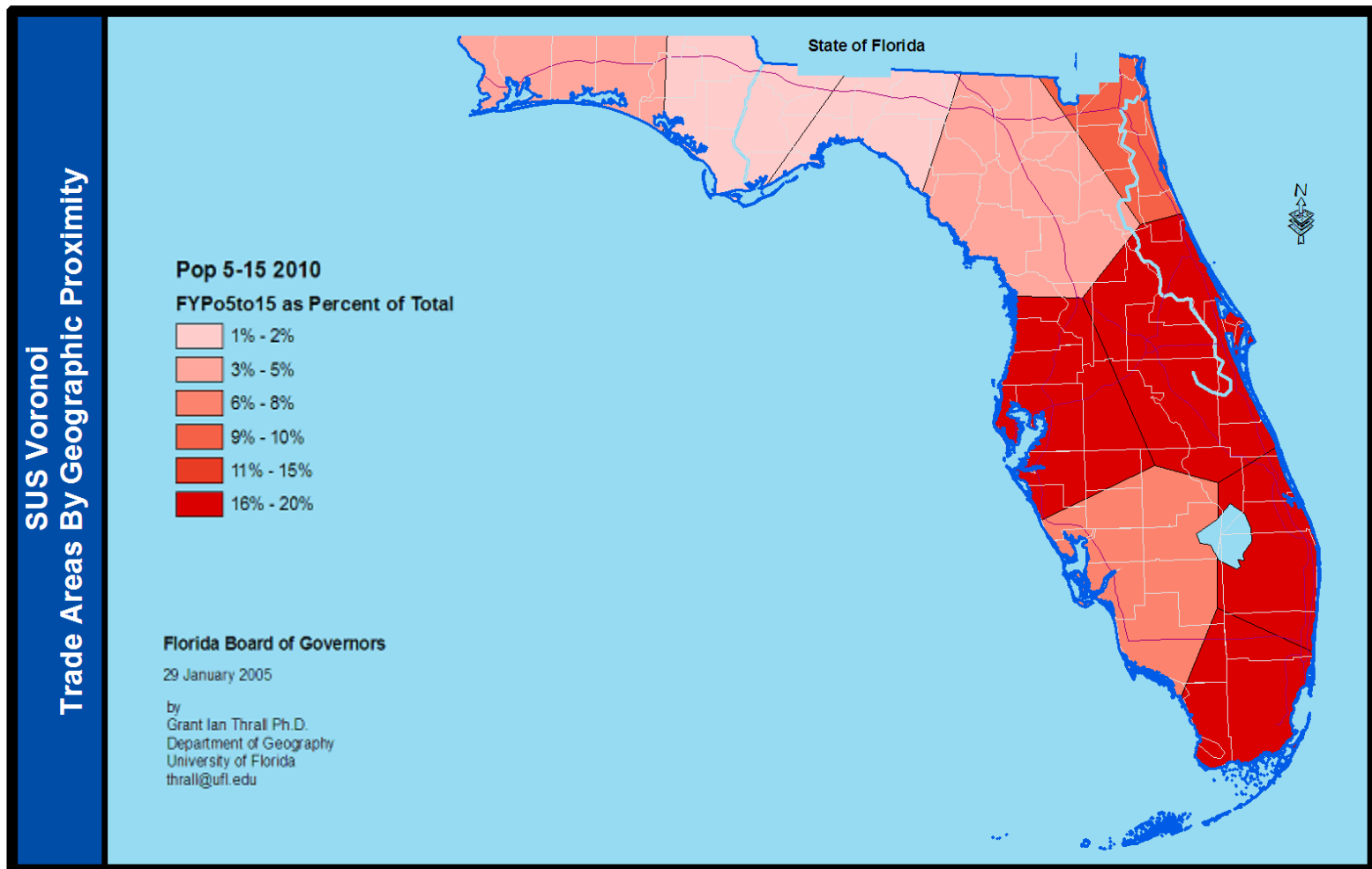
3.4d Total Graduate Population 2010 by SUS Trade Area



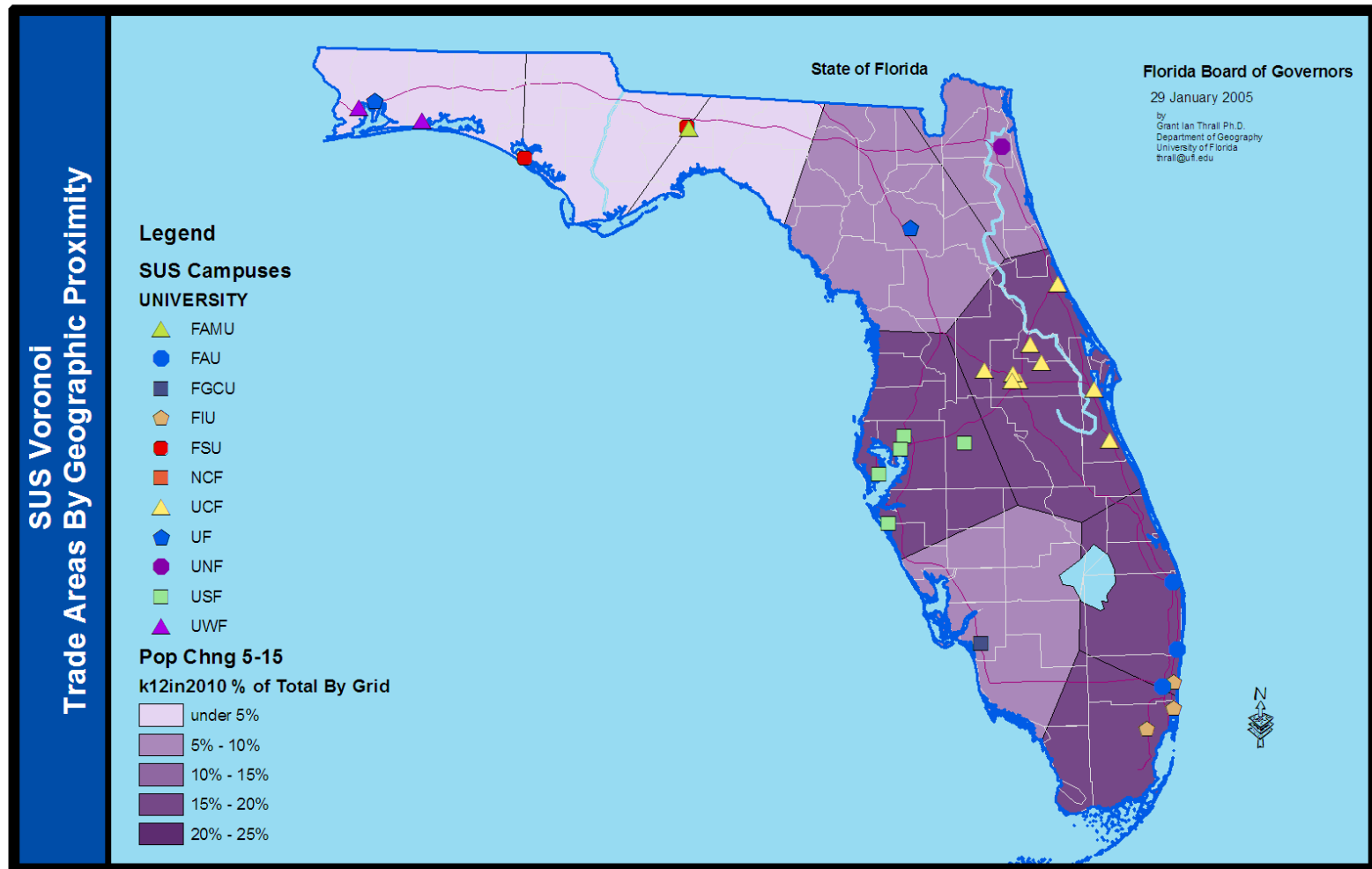
3.4e Change in Graduate Population 2005-2010 by SUS Trade Area



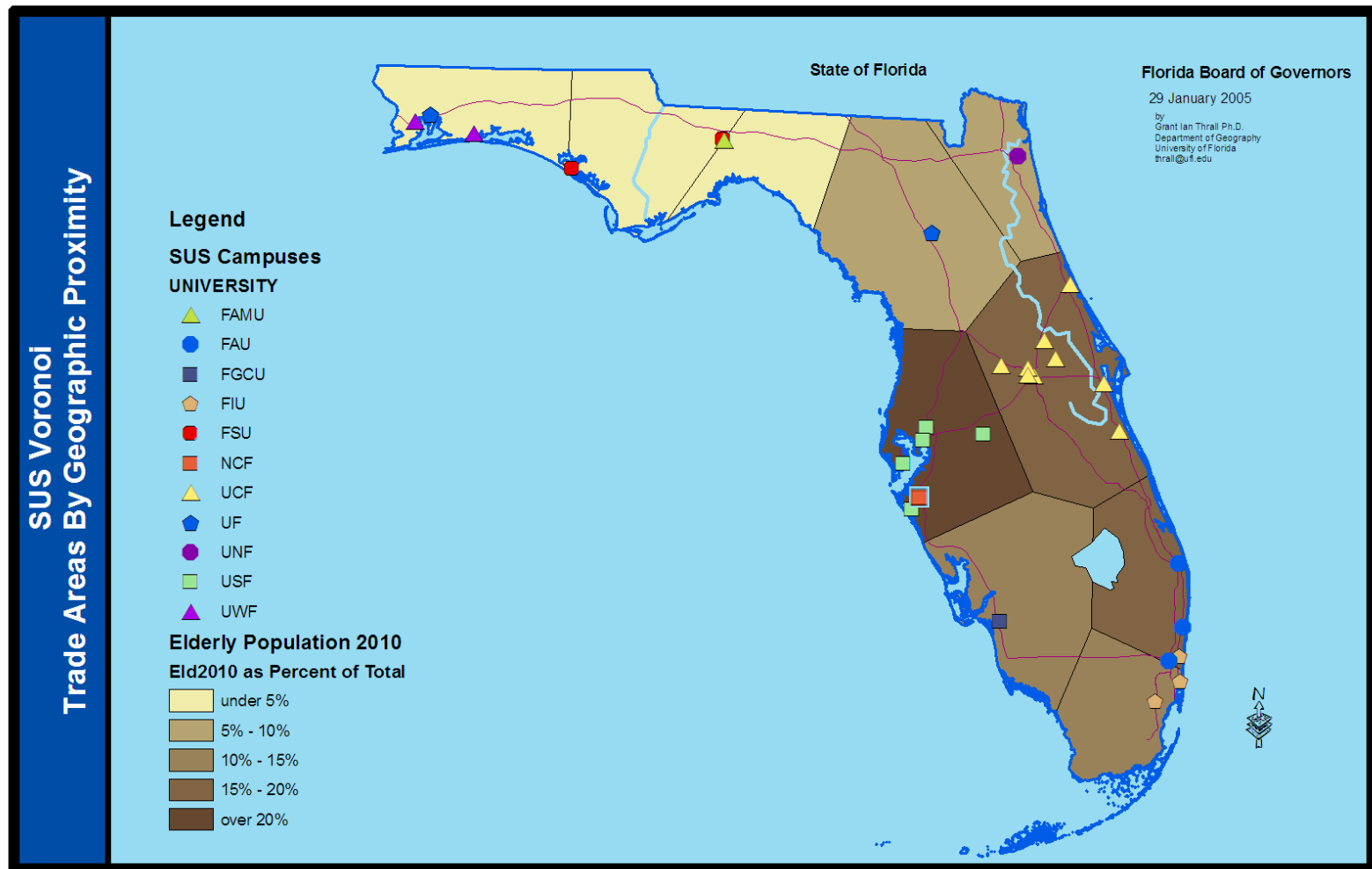
3.4f Total 5 to 15 Year Olds in 2010 by SUS Trade Area



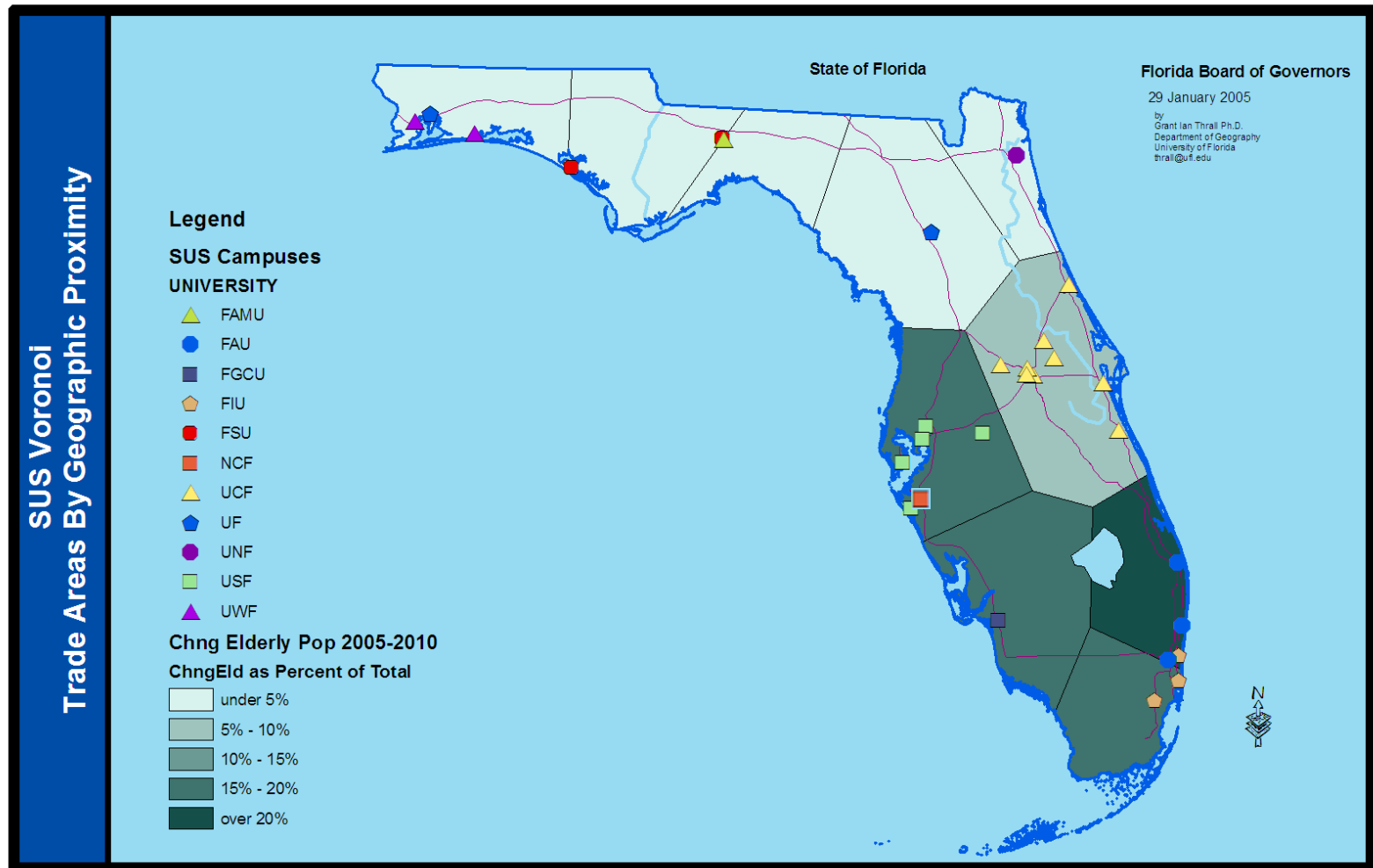
3.4g Change in 5 to 15 Year Olds 2005-2010 by SUS Trade Area



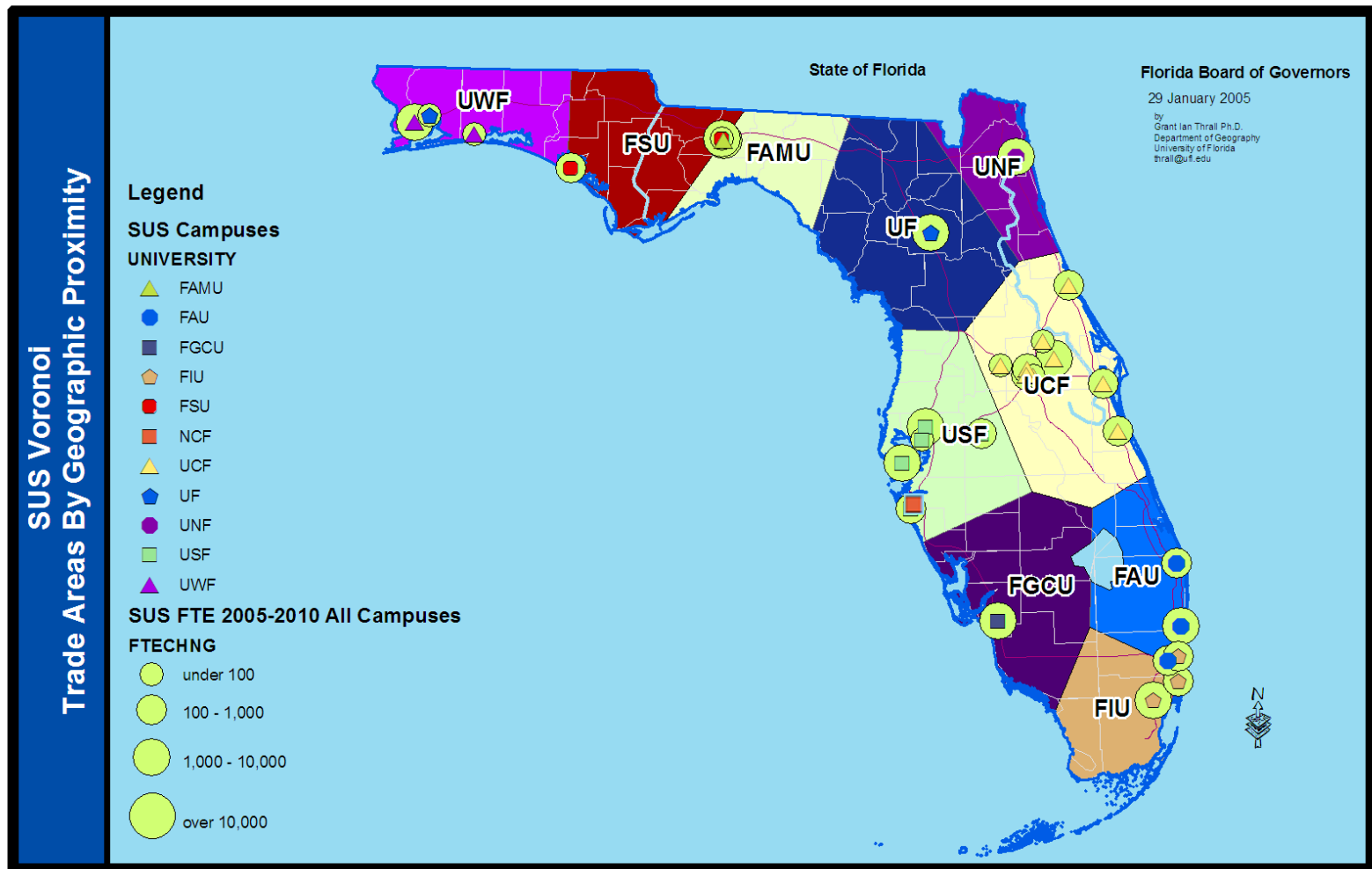
3.4h Total 60+ Population 2010 by SUS Main Campus Trade Area



3.4i Change in Total 60+ Population 2005-2010 by SUS Main Campus Trade Area

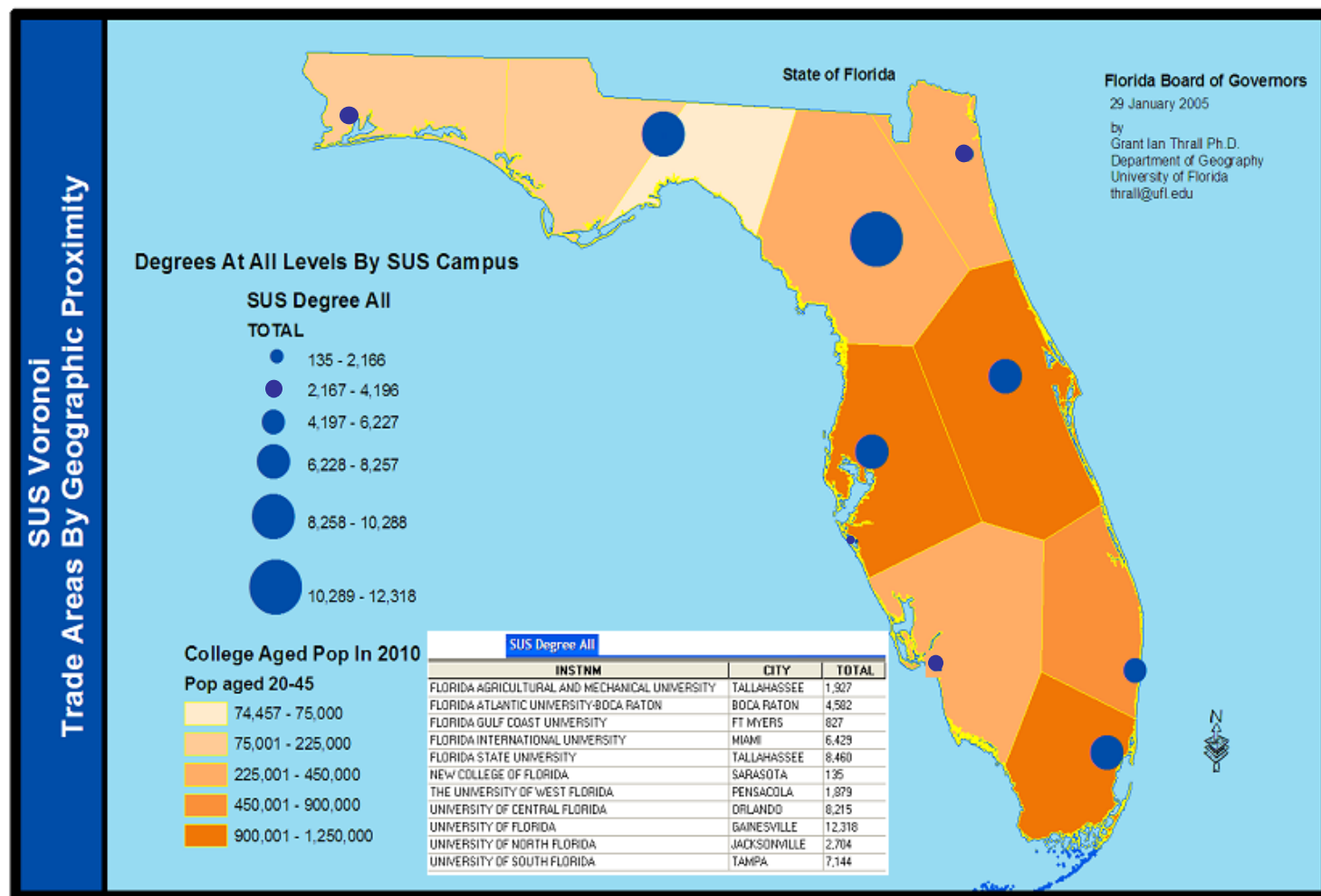


3.4k SUS Campus FTE Change 2005- 2010 with SUS Main Campus Trade Area

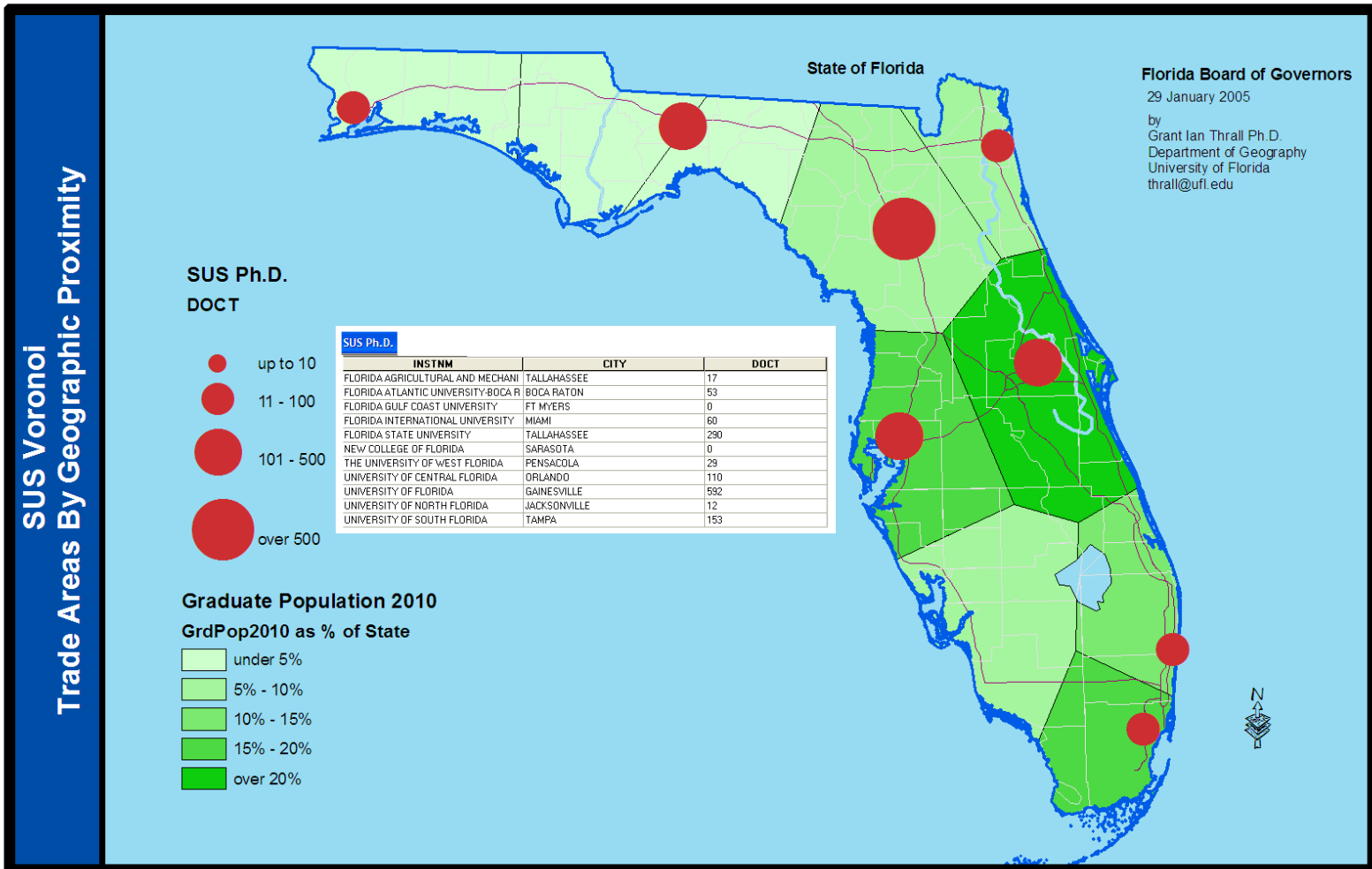


3.5 Graduates by Level

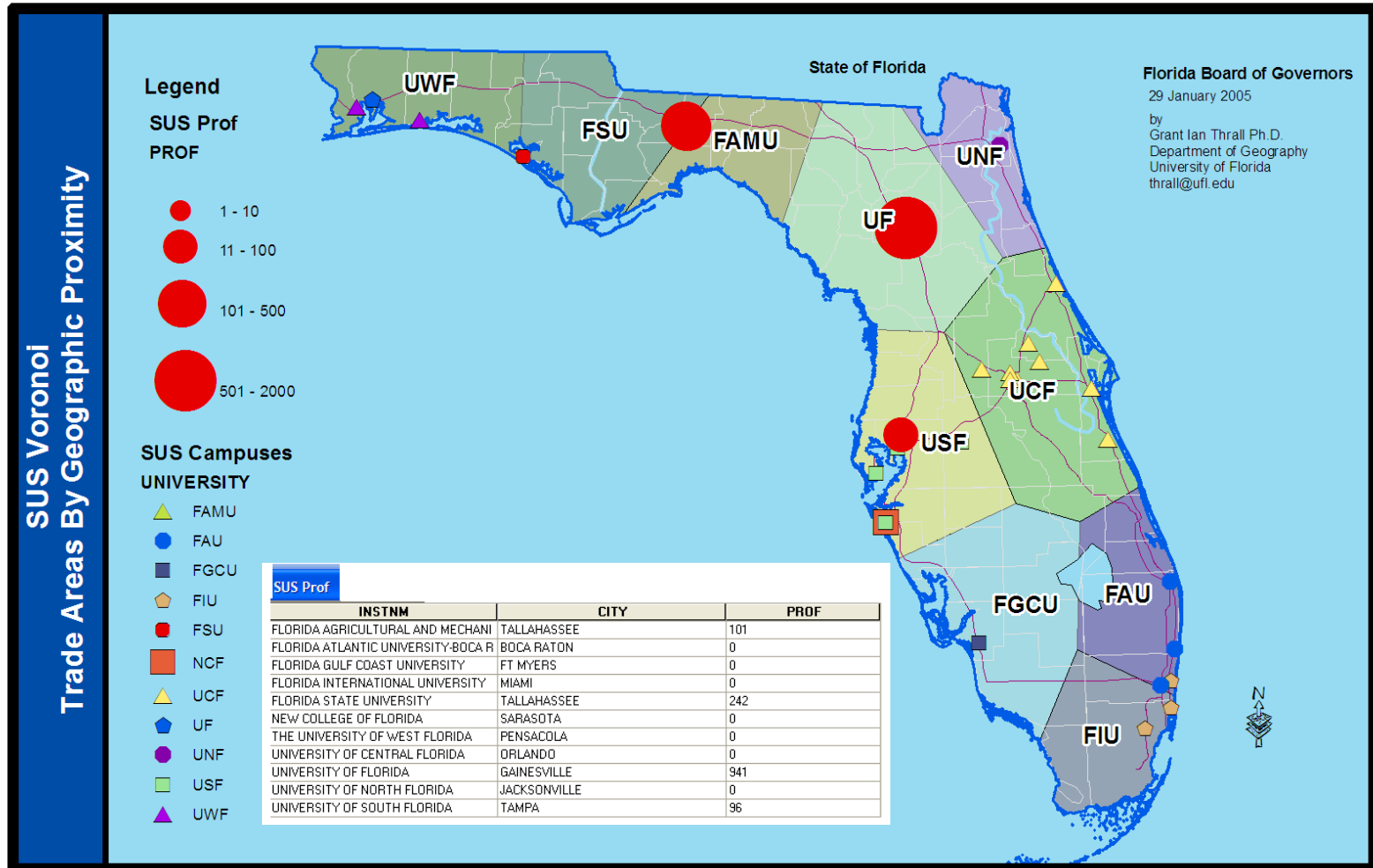
3.5a SUS Degrees All Levels 2002-03 (IPEDS)



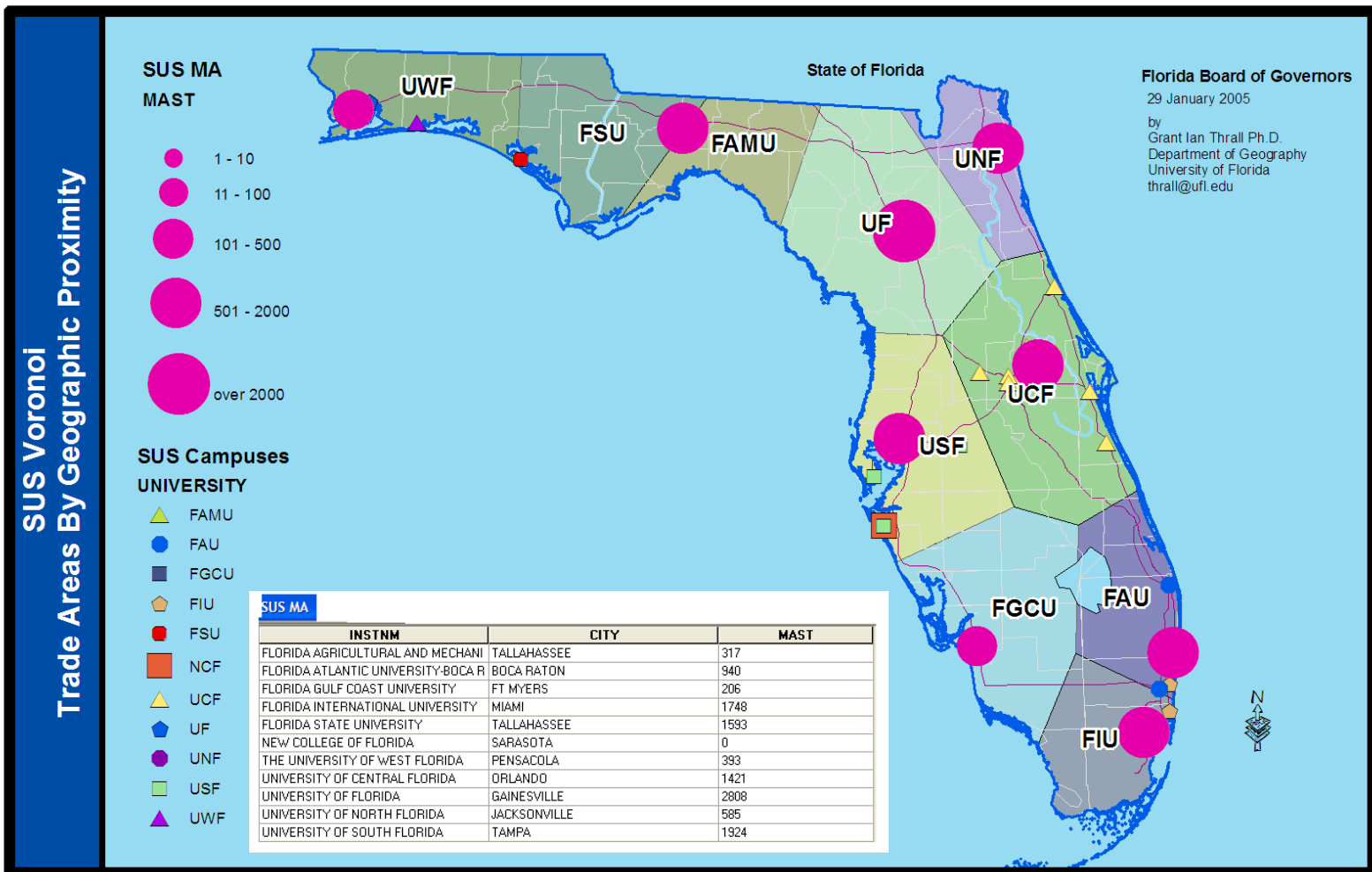
3.5b SUS Doctoral Degrees 2002-03 & Graduate Population 2010 by SUS Main Campus Trade Area



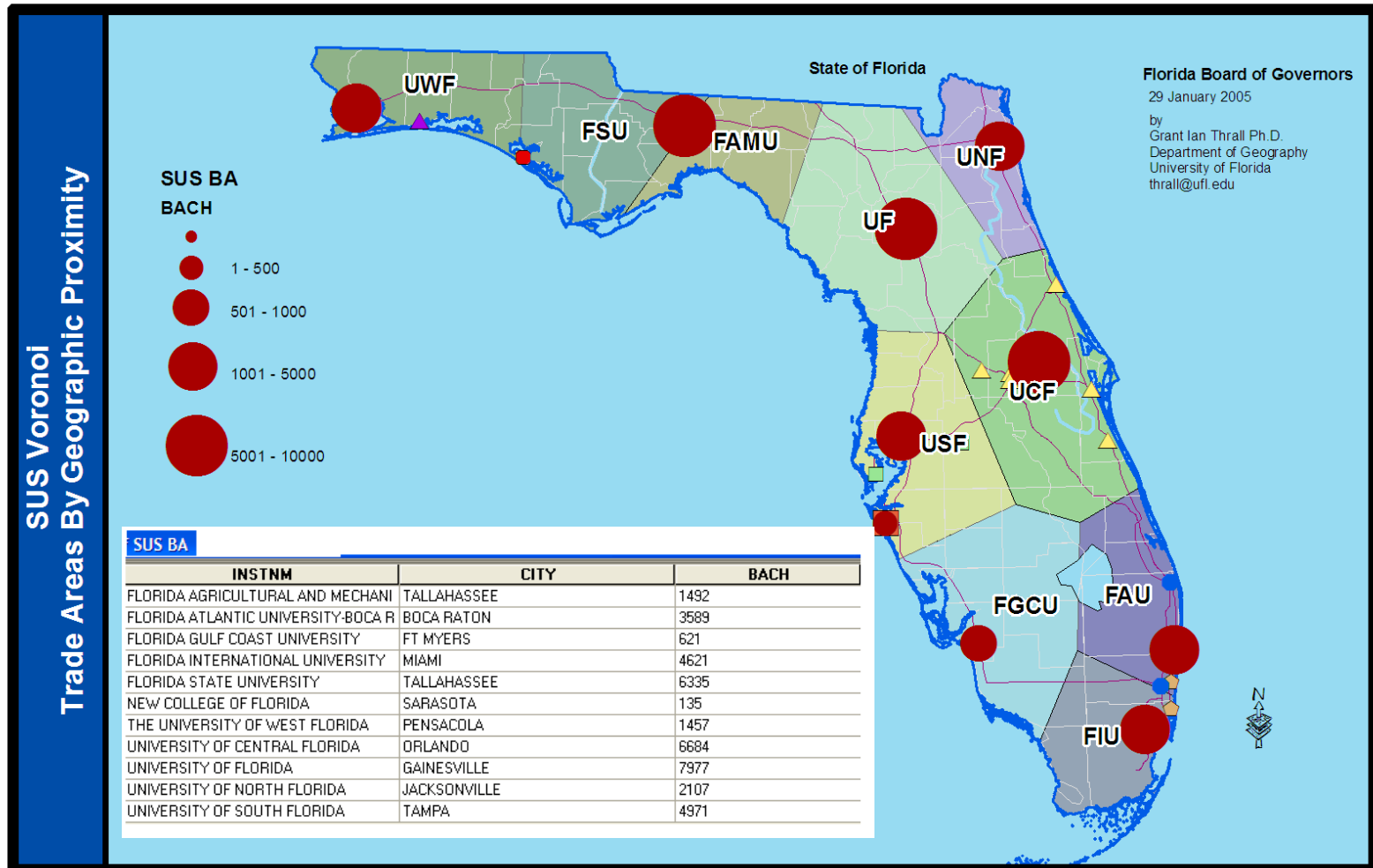
3.5c SUS Professional Degrees 2002-03



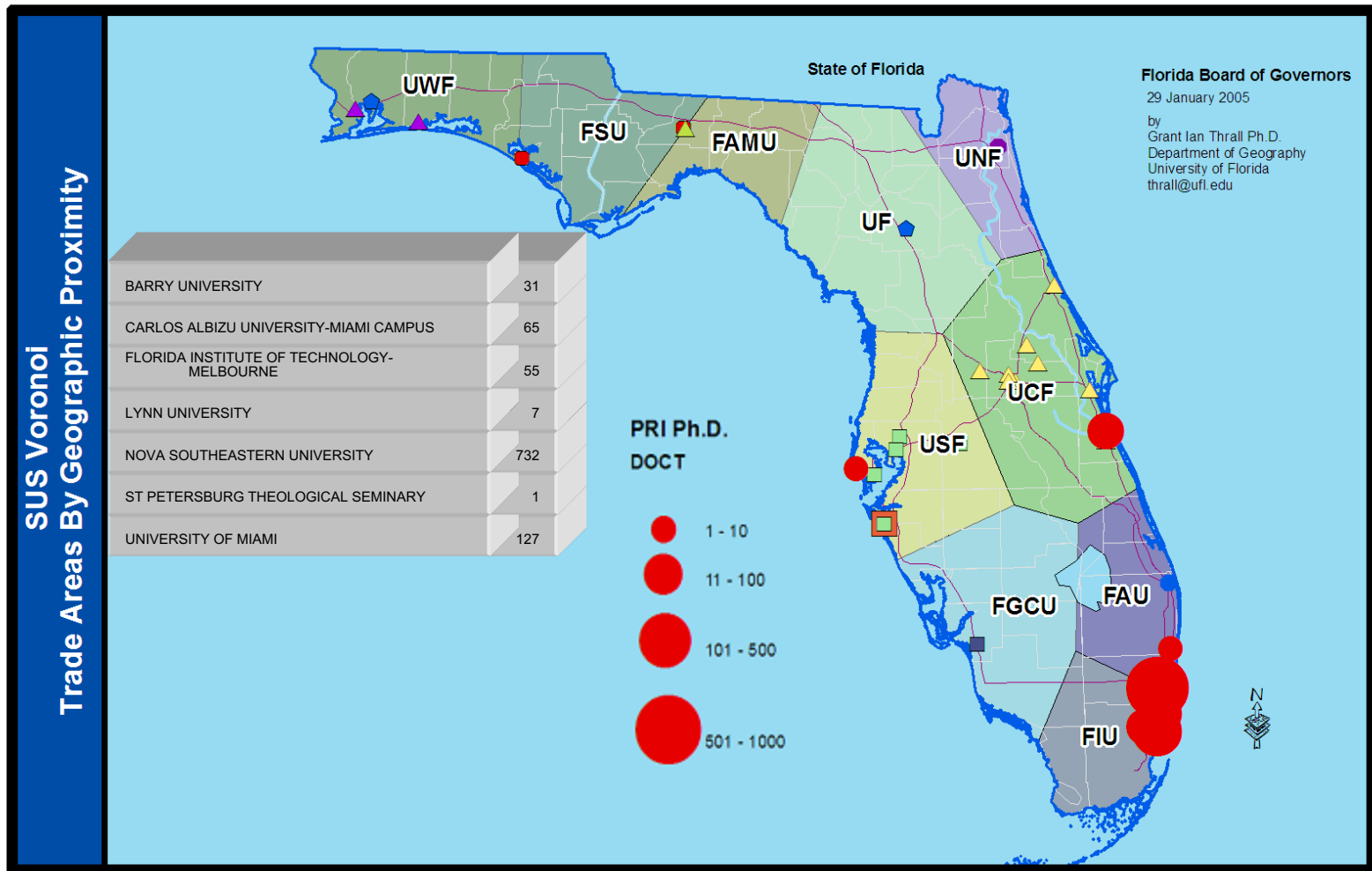
3.5d SUS Master's Degrees 2002-03



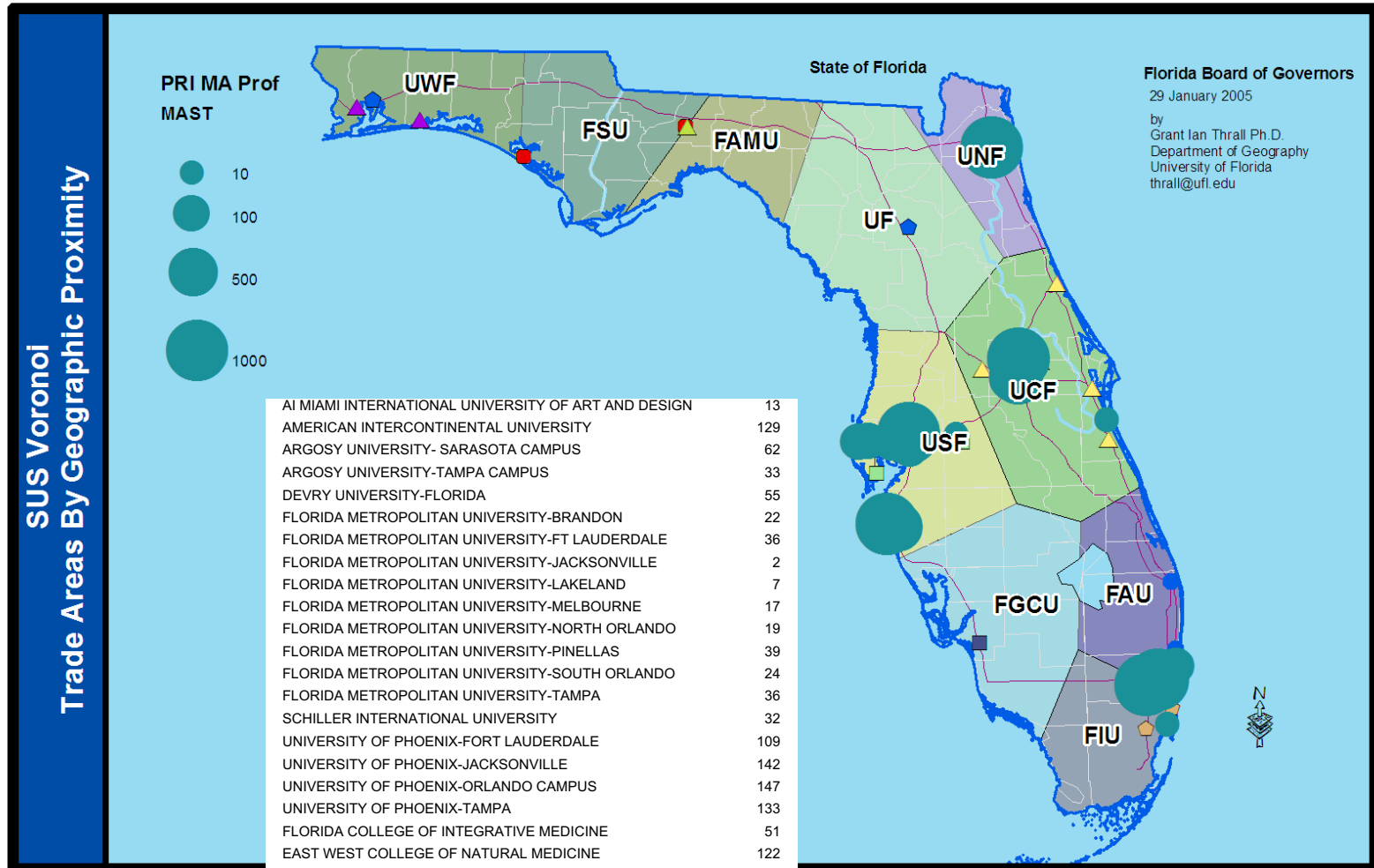
3.5e SUS Bachelor Degrees 2002-03



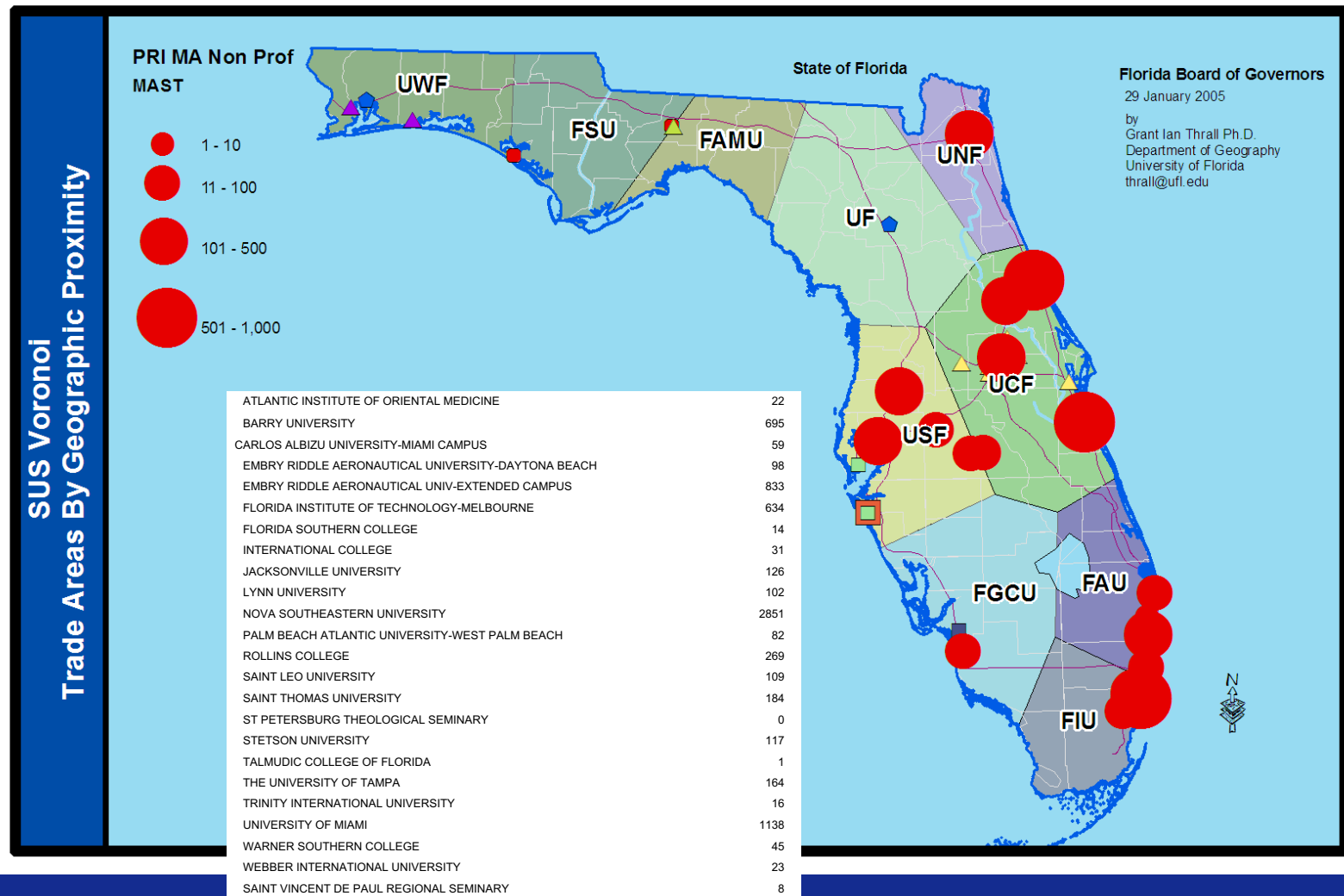
3.5h Private Not-for-Profit Doctoral Degrees 2002-03



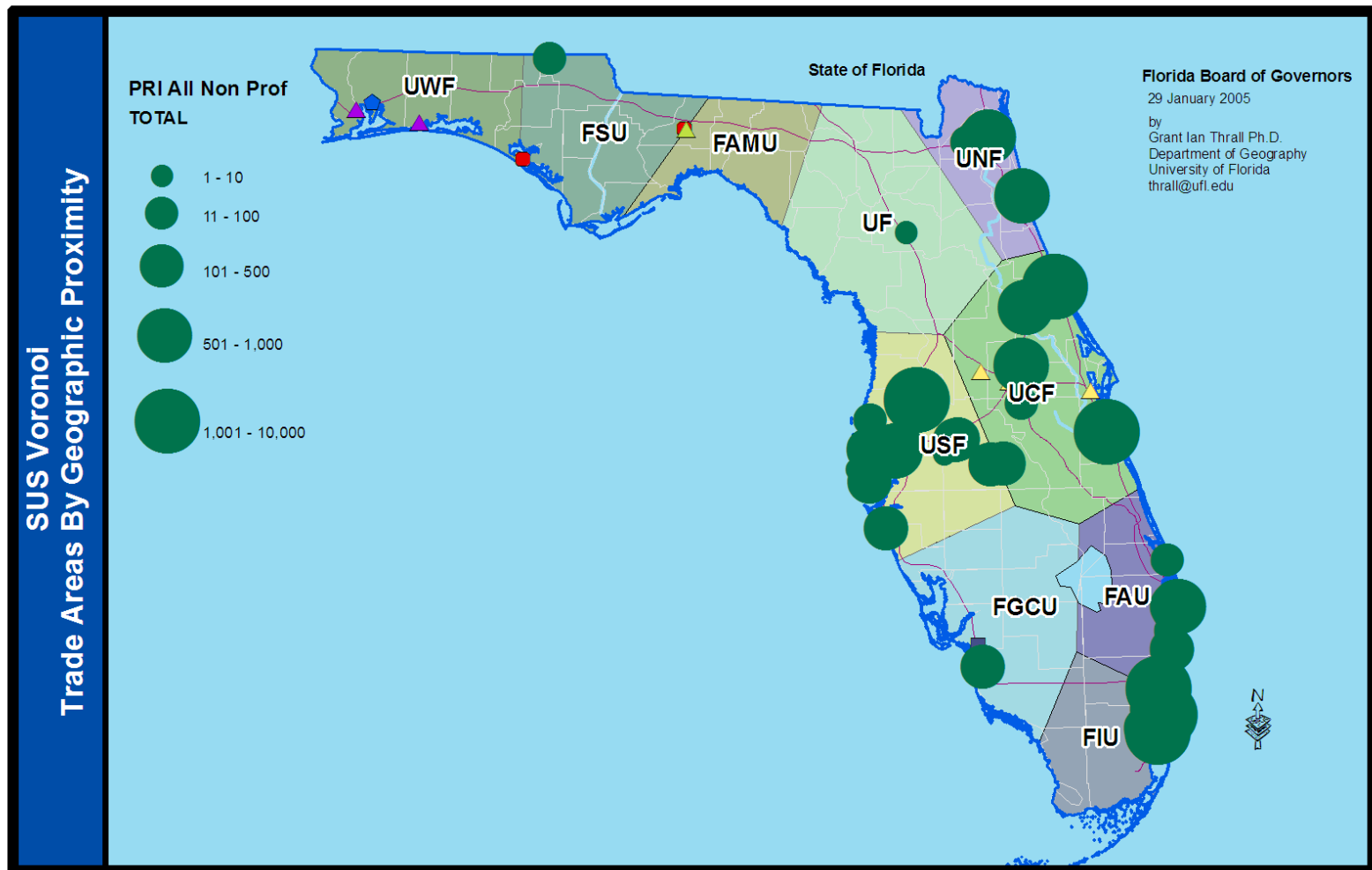
3.5j Private for-Profit Master's Degrees 2002-03



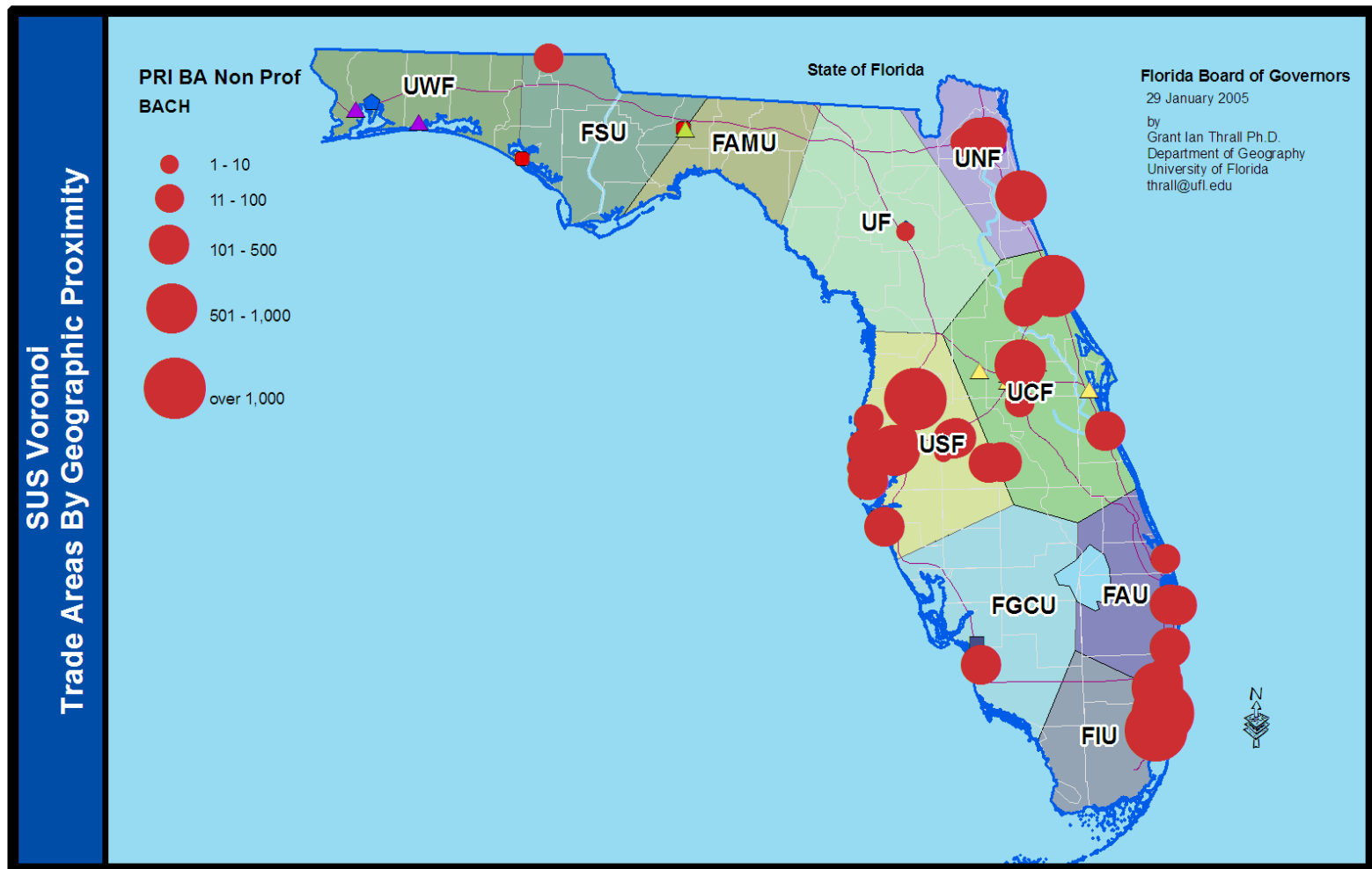
3.5k Private Not-for-Profit Master's Degrees 2002-03



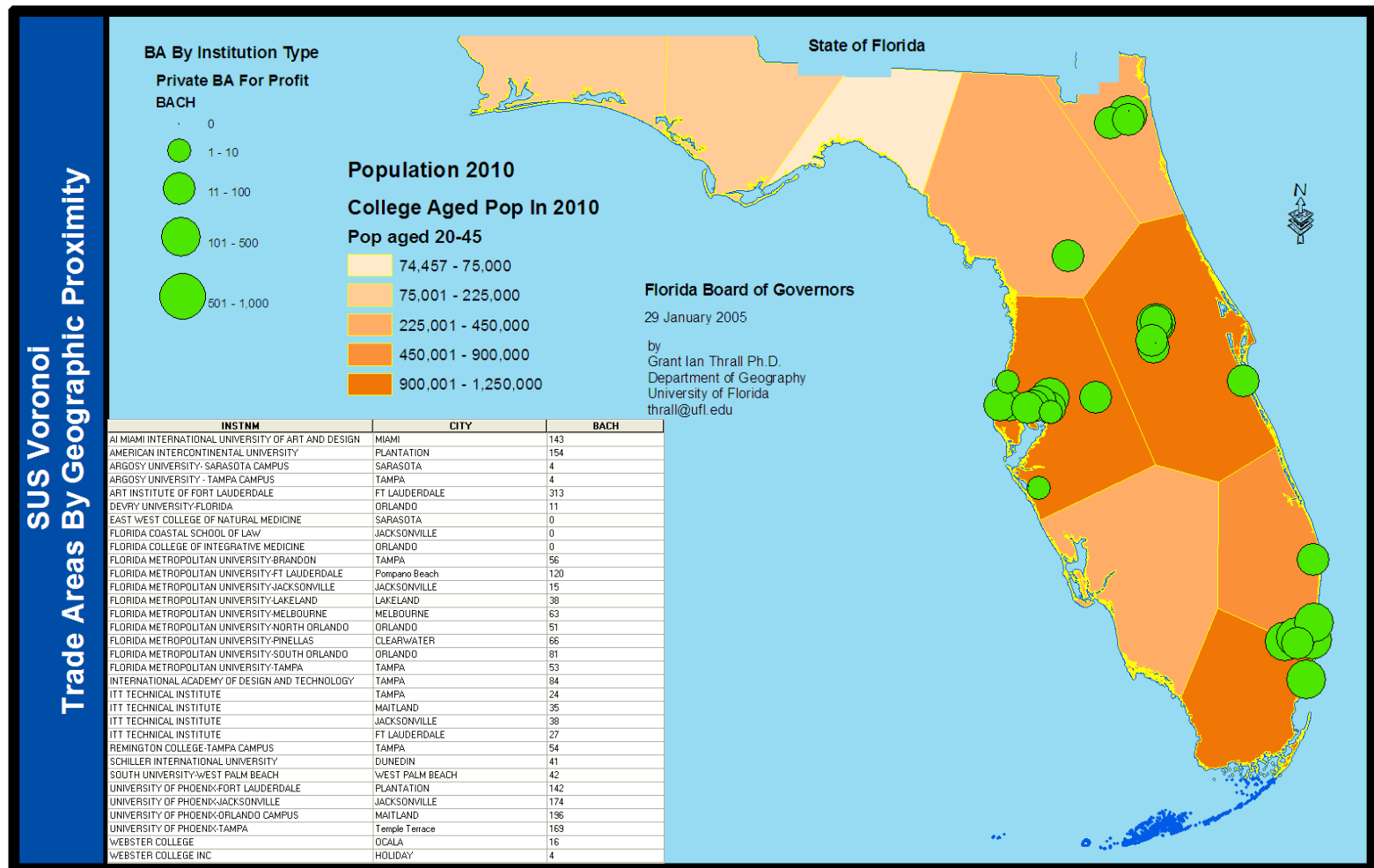
3.5I Private Non-Profit All Degree Levels 2002-03



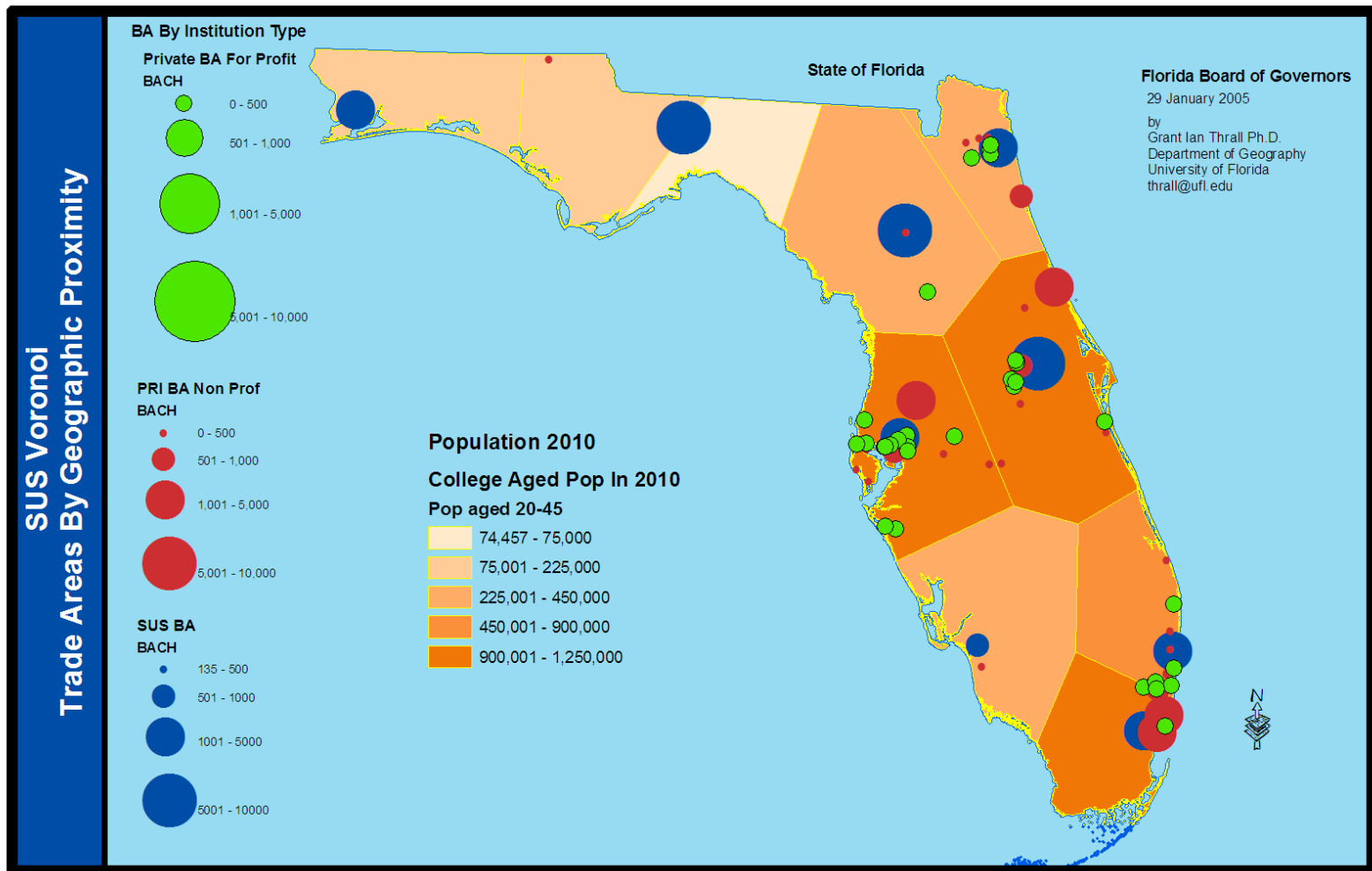
3.5m Private Non-Profit Bachelor Degrees 2002-03



3.5o Private for-Profit Bachelor Degrees 2002-03



3.5p SUS, Private for-Profit and Private Not-for-Profit Bachelor Degrees



3.5q Tables: Bachelor Degrees at Private Institutions

PRI BA Non Prof

INSTNM	CITY	BACH
ATLANTIC INSTITUTE OF ORIENTAL MEDICINE	FT LAUDERDALE	19
BARRY UNIVERSITY	MIAMI	1371
BETHUNE COOKMAN COLLEGE	DAYTONA BEACH	351
CARLOS ALBIZU UNIVERSITY-MIAMI CAMPUS	Miami	37
CITY COLLEGE	FT LAUDERDALE	19
CITY COLLEGE BRANCH CAMPUS	GAINESVILLE	10
CLEARWATER CHRISTIAN COLLEGE	CLEARWATER	133
ECKERD COLLEGE	ST PETERSBURG	340
EDWARD WATERS COLLEGE	JACKSONVILLE	126
EMBRY RIDDLE AERONAUTICAL UNIV-EXTENDED CAMPUS	Daytona Beach	1617
EMBRY RIDDLE AERONAUTICAL UNIVERSITY-DAYTONA BEACH	DAYTONA BEACH	835
EVERGLADES COLLEGE	Fort Lauderdale	25
FLAGLER COLLEGE	ST AUGUSTINE	538
FLORIDA CHRISTIAN COLLEGE INC	KISSIMEE	27
FLORIDA COLLEGE	TEMPLE TERRACE	15
FLORIDA HOSPITAL COLLEGE OF HEALTH SCIENCES	ORLANDO	25
FLORIDA INSTITUTE OF TECHNOLOGY-MELBOURNE	MELBOURNE	386
FLORIDA MEMORIAL COLLEGE	MIAMI	241
FLORIDA SOUTHERN COLLEGE	LAKELAND	456
HOBE SOUND BIBLE COLLEGE	HOBE SOUND	15
INTERNATIONAL COLLEGE	NAPLES	240
JACKSONVILLE UNIVERSITY	JACKSONVILLE	401
JOHNSON & WALES UNIVERSITY-FLORIDA CAMPUS	NORTH MIAMI	144
JONES COLLEGE-JACKSONVILLE	JACKSONVILLE	67
LYNN UNIVERSITY	BOCA RATON	351
NORTHWOOD UNIVERSITY-FLORIDA EDUCATION CENTER	WEST PALM BEACH	222
NOVA SOUTHEASTERN UNIVERSITY	FT LAUDERDALE	942
PALM BEACH ATLANTIC UNIVERSITY-WEST PALM BEACH	WEST PALM BEACH	493
RINGLING SCHOOL OF ART AND DESIGN	SARASOTA	206
ROLLINS COLLEGE	WINTER PARK	686
SAINT JOHN VIANNEY COLLEGE SEMINARY	MIAMI	14
SAINT LEO UNIVERSITY	ST LEO	1901
SAINT THOMAS UNIVERSITY	MIAMI	300
SAINT VINCENT DE PAUL REGIONAL SEMINARY	BOYNTON BEACH	0
SOUTHEASTERN COLLEGE ASSEMBLIES OF GOD	LAKELAND	245
SPURGEON BAPTIST BIBLE COLLEGE	MULBERRY	5
ST PETERSBURG THEOLOGICAL SEMINARY	ST PETERSBURG	2
STETSON UNIVERSITY	DELAND	454
TALMUDIC COLLEGE OF FLORIDA	MIAMI BEACH	3
THE BAPTIST COLLEGE OF FLORIDA	GRACEVILLE	98
THE UNIVERSITY OF TAMPA	TAMPA	667
TRINITY BAPTIST COLLEGE	JACKSONVILLE	58
TRINITY COLLEGE OF FLORIDA	TRINITY	27
TRINITY INTERNATIONAL UNIVERSITY	MIAMI	89
UNIVERSITY OF MIAMI	CORAL GABLES	2053
WARNER SOUTHERN COLLEGE	LAKE WALES	366
WEBBER INTERNATIONAL UNIVERSITY	BABSON PARK	106

Private BA For Profit

INSTNM	CITY	BACH
AI MIAMI INTERNATIONAL UNIVERSITY OF ART AND DESIGN	MIAMI	143
AMERICAN INTERCONTINENTAL UNIVERSITY	PLANTATION	154
ARGOSY UNIVERSITY- SARASOTA CAMPUS	SARASOTA	4
ARGOSY UNIVERSITY - TAMPA CAMPUS	TAMPA	4
ART INSTITUTE OF FORT LAUDERDALE	FT LAUDERDALE	313
DEVRY UNIVERSITY-FLORIDA	ORLANDO	11
EAST WEST COLLEGE OF NATURAL MEDICINE	SARASOTA	0
FLORIDA COASTAL SCHOOL OF LAW	JACKSONVILLE	0
FLORIDA COLLEGE OF INTEGRATIVE MEDICINE	ORLANDO	0
FLORIDA METROPOLITAN UNIVERSITY-BRANDON	TAMPA	56
FLORIDA METROPOLITAN UNIVERSITY-FT LAUDERDALE	Pompano Beach	120
FLORIDA METROPOLITAN UNIVERSITY-JACKSONVILLE	JACKSONVILLE	15
FLORIDA METROPOLITAN UNIVERSITY-LAKELAND	LAKELAND	38
FLORIDA METROPOLITAN UNIVERSITY-MELBOURNE	MELBOURNE	63
FLORIDA METROPOLITAN UNIVERSITY-NORTH ORLANDO	ORLANDO	51
FLORIDA METROPOLITAN UNIVERSITY-PINELLAS	CLEARWATER	66
FLORIDA METROPOLITAN UNIVERSITY-SOUTH ORLANDO	ORLANDO	81
FLORIDA METROPOLITAN UNIVERSITY-TAMPA	TAMPA	53
INTERNATIONAL ACADEMY OF DESIGN AND TECHNOLOGY	TAMPA	84
ITT TECHNICAL INSTITUTE	TAMPA	24
ITT TECHNICAL INSTITUTE	MAITLAND	35
ITT TECHNICAL INSTITUTE	JACKSONVILLE	38
ITT TECHNICAL INSTITUTE	FT LAUDERDALE	27
REMINGTON COLLEGE-TAMPA CAMPUS	TAMPA	54
SCHILLER INTERNATIONAL UNIVERSITY	DUNEDIN	41
SOUTH UNIVERSITY-WEST PALM BEACH	WEST PALM BEACH	42
UNIVERSITY OF PHOENIX-FORT LAUDERDALE	PLANTATION	142
UNIVERSITY OF PHOENIX-JACKSONVILLE	JACKSONVILLE	174
UNIVERSITY OF PHOENIX-ORLANDO CAMPUS	MAITLAND	196
UNIVERSITY OF PHOENIX-TAMPA	Temple Terrace	163
WEBSTER COLLEGE	OCALA	16
WEBSTER COLLEGE INC	HOLIDAY	4

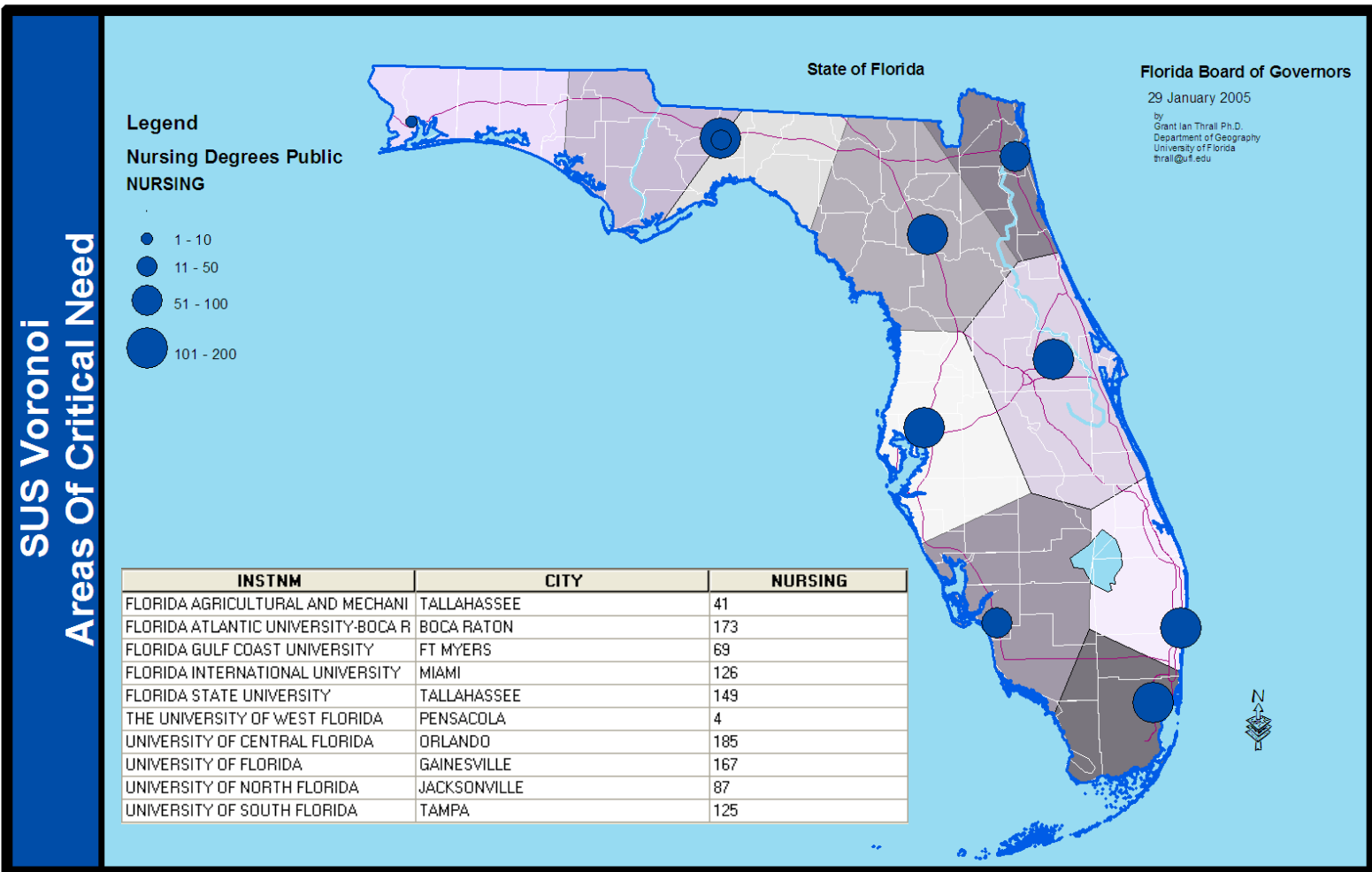
3.5q Table: Bachelor Degrees, SUS Institutions, 2002-03

SUS BA

INSTNM	CITY	BACH
FLORIDA AGRICULTURAL AND MECHANICAL UNIVERSITY	TALLAHASSEE	1,492
FLORIDA ATLANTIC UNIVERSITY-BOCA RATON	BOCA RATON	3,589
FLORIDA GULF COAST UNIVERSITY	FT MYERS	621
FLORIDA INTERNATIONAL UNIVERSITY	MIAMI	4,621
FLORIDA STATE UNIVERSITY	TALLAHASSEE	6,335
NEW COLLEGE OF FLORIDA	SARASOTA	135
THE UNIVERSITY OF WEST FLORIDA	PENSACOLA	1,457
UNIVERSITY OF CENTRAL FLORIDA	ORLANDO	6,684
UNIVERSITY OF FLORIDA	GAINESVILLE	7,977
UNIVERSITY OF NORTH FLORIDA	JACKSONVILLE	2,107
UNIVERSITY OF SOUTH FLORIDA	TAMPA	4,971

3.6 Critical Need and Emerging Technology Areas

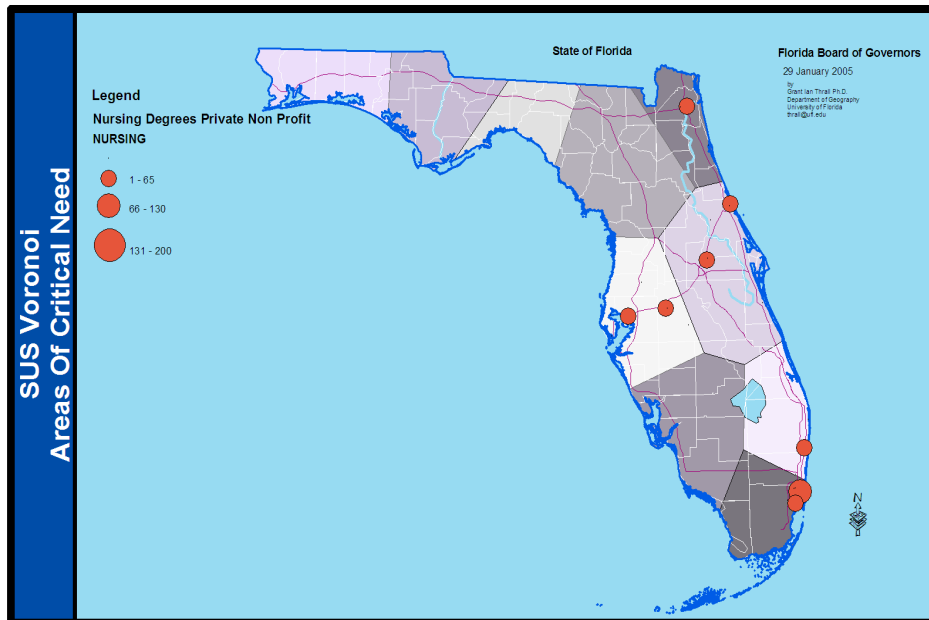
3.6h Critical Need Area – SUS Nursing Bachelor Degrees 2002-03



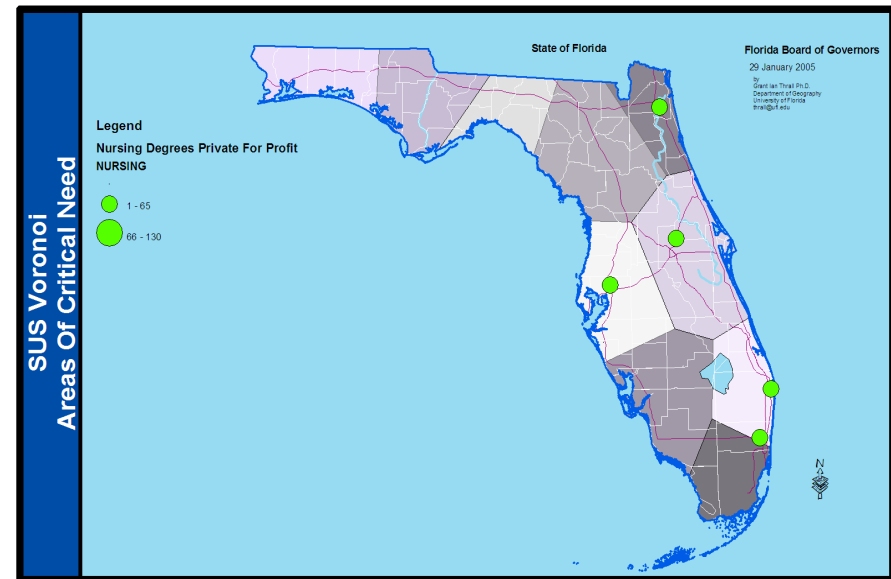
3.6i Critical Need Area

– Nursing Bachelor Degrees from Private Universities 2002-03

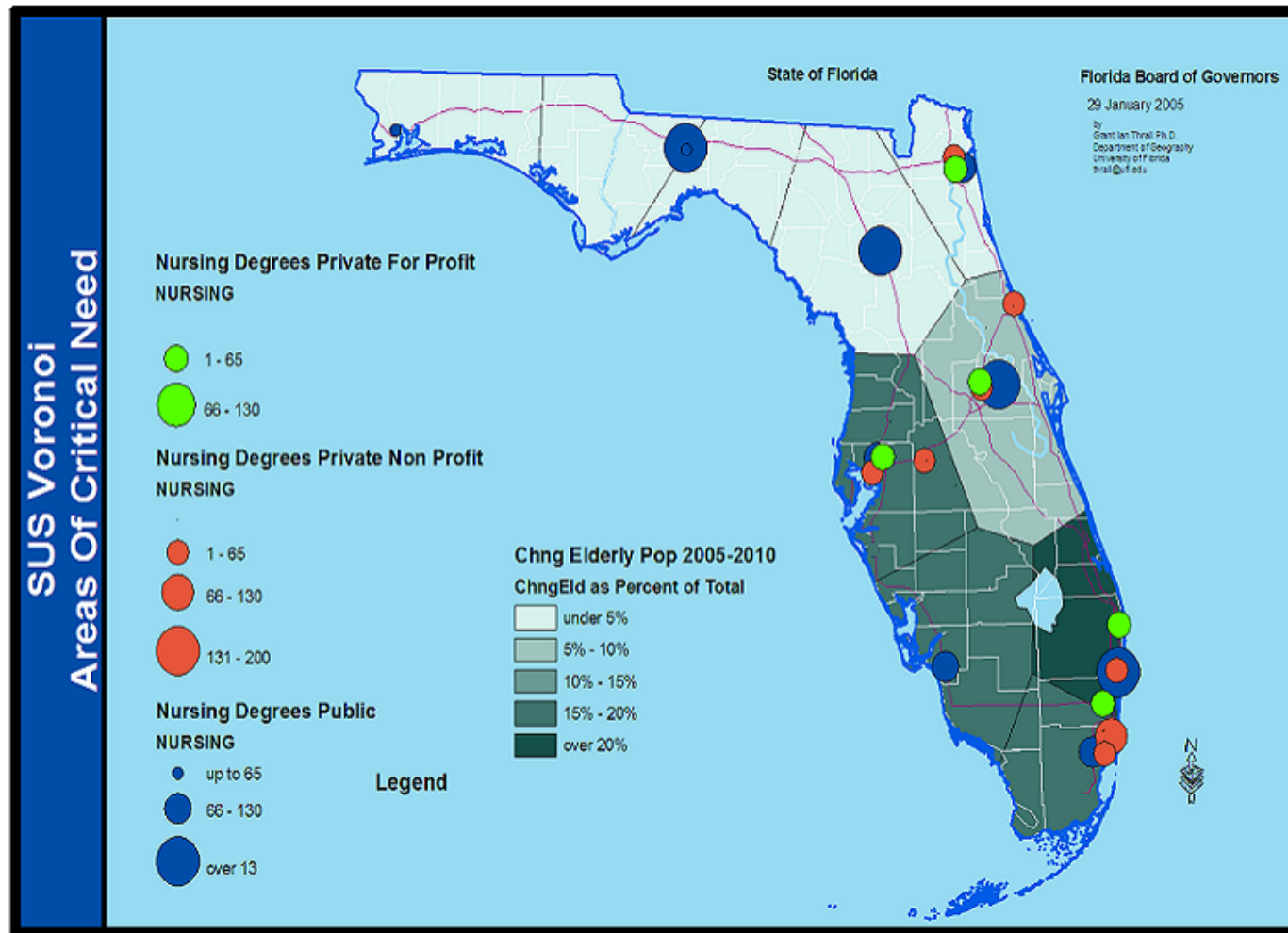
Private Not-for-Profit



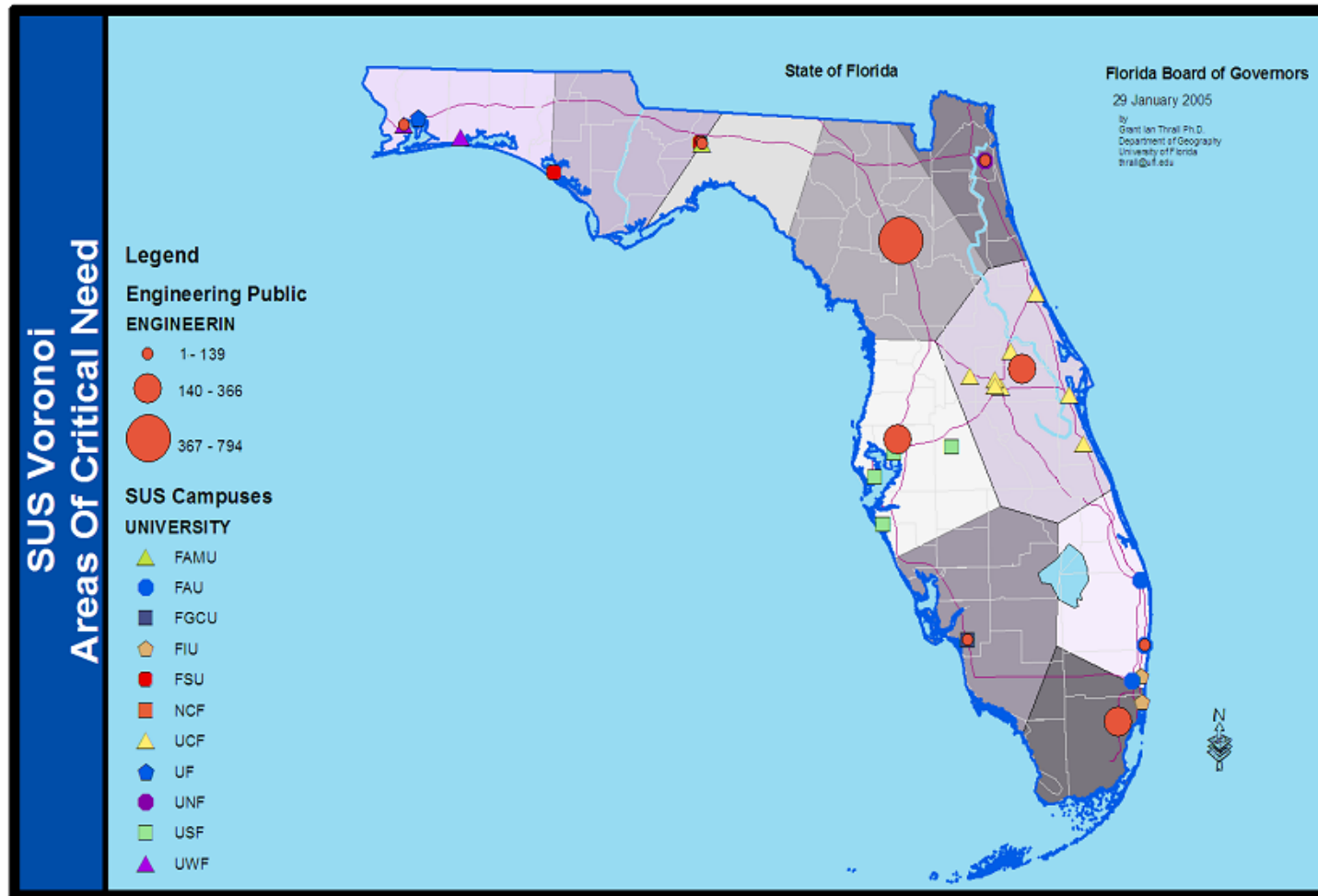
Private for-Profit



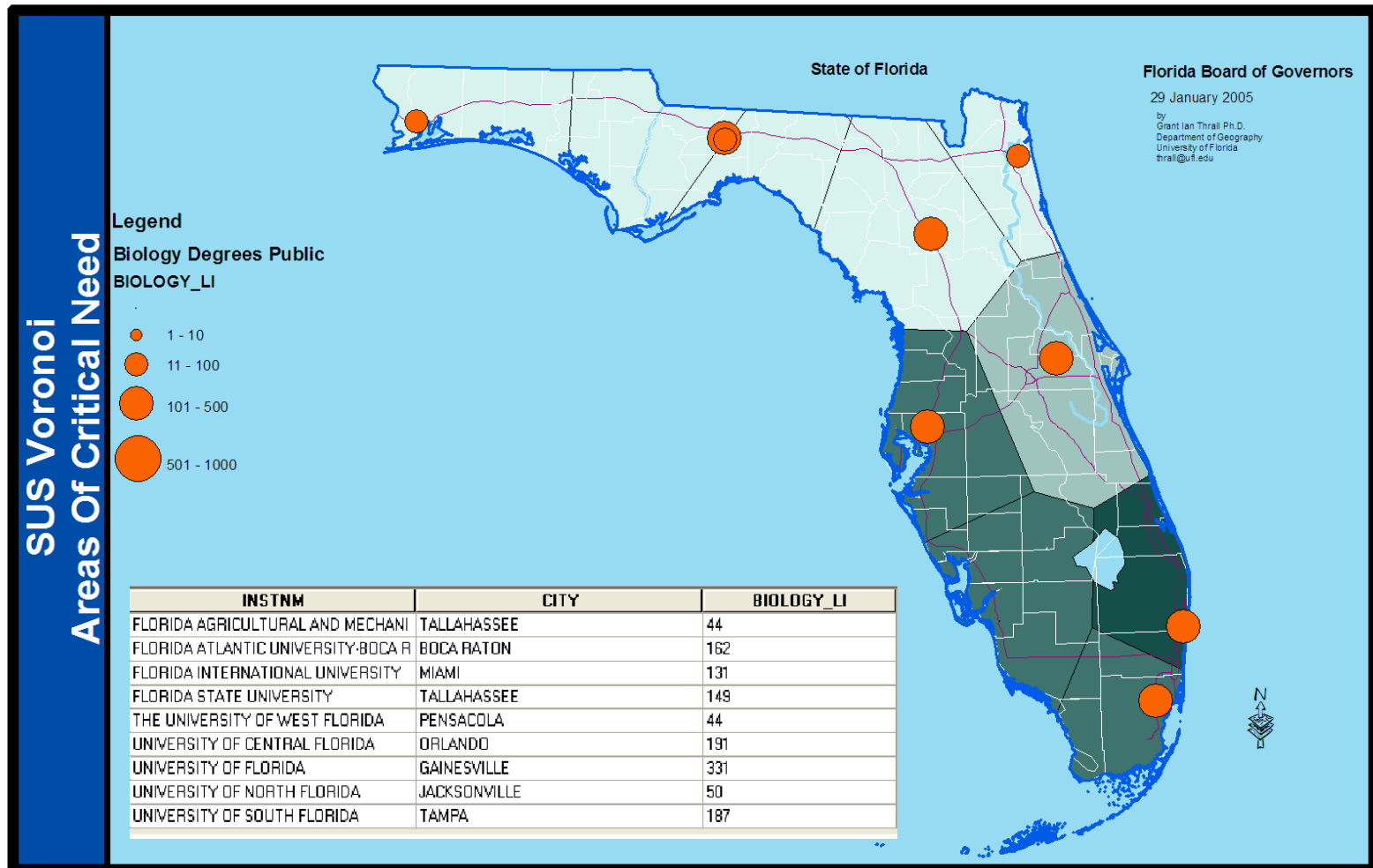
3.6j Critical Need Area – 2002-03 Nursing Bachelor Degrees at SUS, Private for-Profit and Private Not-for-Profit Institutions



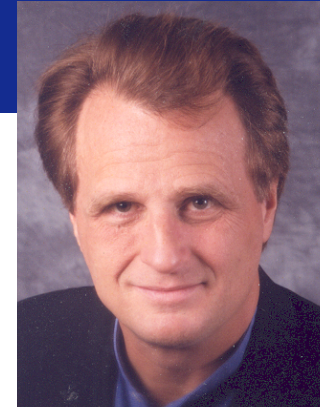
3.6k Emerging Technologies Areas – SUS Engineering Bachelor Degrees 2002-03



3.6m Emerging Technologies Area – SUS Biological Science Bachelor Degrees



About Grant I Thrall



Dr. Thrall has led the development of the contemporary university school of business geography thought. His 2002 book published by Oxford University Press, *Business Geography and New Real Estate Market Analysis*, is a synthesis of his pioneering contributions for over a quarter century. The American Real Estate Society's *Journal of Real Estate Literature* called his book "a paradigm shift" for real estate market analysis. The Wharton School of Business writes that Thrall's book is "compelling" as it builds the bridge between urban economic and geographic sciences advancing real estate market analysis. George Mason University writes that Thrall's book is one that every person in business needs to read. He has been invited to give presentations on his 2002 book to University of Pennsylvania's Wharton School of Business and Cal Berkeley's Haas School of Business, and others. In 2004 he was recognized as a "thought leader" having been invited to present the annual "Golledge Lecture" at University of California at Santa Barbara on his business geography topic.

Dr. Thrall has written or edited over a dozen books, and over 150 professional articles. His ten volume *Scientific Geography Series* is the standard reference for academic and practitioner applications of business location modeling and applications of geographic information systems to the urban built environment. Bridging the gap between academia and the private sector, for over a decade Thrall has been a consultant with Global Real Estate Research Practice, Financial Advisory Services, of PriceWaterhouseCoopers LLP, and he has twenty years experience consulting with his own firm, Thrall Consulting. A sample of his consultancies includes the creation of the market analysis for 1,000,000 square foot University Corners mall, the largest development ever within the city of Gainesville, site selection services for O2Bkids, market analysis for St. Joe Company, Gables Apartments and Las Vegas' proposed Meadows Hospital.

Dr. Thrall has been invited to make many public speaking engagements, and to publish articles for organizations including Centers for Disease Control and Prevention, FannieMae and the Appraisal Institute. Professor Thrall is the only geographer to have been on the academic board of editors of the Appraisal Institute's *Appraisal Journal*. He is one of four geographers that have been invited to be fellows of the Weimer School For Advanced Studies In Real Estate and Land Economics, one of the highest accolades in academic and high-level practitioner real estate.

Dr. Thrall has been a Professor at University of Florida since 1983, where he is regularly nominated and has been a recipient of teaching awards. He created the Business Geography curriculum, joint between the College of Business and his home Department of Geography in the College of Liberal Arts and Sciences. He presently advises ten students at the MA and Ph.D. levels, and numerous undergraduates. He is a Weimer Fellow of the Homer Hoyt Institute, a member of the academic board of the Appraisal Institute's *Appraisal Journal*, co-editor of the *Journal of Real Estate Literature*, reelected for a second term in 2004 to the Board of Directors of the American Real Estate Society; and he is business geography, software and data editor for the leading GIS professional magazine *GeoSpatial Solutions*. He is on the Board of Directors of the International Geographical Union representing Applied Business Geography. He is a member of the editorial board of *Journal of Real Estate Research*. Dr. Thrall has a Ph.D. in Geography and Economics, and an MA in Economics from The Ohio State University, and a BA in Business from CSULA; he serves on the Board of Directors of his undergraduate alma mater for geography. Professor Grant Thrall has been on the faculty of McMaster University in Canada, and SUNY at Buffalo. In 1989, he was Resident Scholar of the Homer Hoyt Institute in Washington DC. In 1990, he was Visiting Distinguished Professor at San Diego State University.

As a volunteer, Grant Thrall lent his expertise to his resident town of Gainesville, Florida. In appreciation, the Mayor and Gainesville City Commission declared two days as "Grant Thrall Days" for his advice and management of redevelopment of Gainesville's the historic downtown.

www.afn.org/~thrall thrall@ufl.edu