

Linking Education and Industry to Shape the Workforce of Tomorrow – A Data Driven Approach

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Scope of the Talk

- Assessing Industry Needs
 - What are you good at? vs. *What do you want to be good at?*
 - What is in store for the region? (the good, the bad and the ugly)
- How does your current Education Structure support what you are good at (and what you want to be good at)?
 - Education Gap Analysis
- How does education adjust itself to better support industry?
 - Is the relationship endogenous and/or self perpetuating?
- The Benefits of Education – Measuring Value Added
 - Assessing the observed impacts of the educational structure on the economy using novel methodologies.
 - Why does education benefit from supporting industry?

What are you good at? vs. *What do you want to be good at?*

Florida's Targeted Industry Sectors

(Roadmap to Florida's Future 2007 – 2012 - Strategic Plan for Economic Development)

- Life Sciences
- Information Technology
- Aviation/Aerospace
- Homeland Security / Defense
- Financial and Professional Services
- Manufacturing

What are you good at? vs. *What do you want to be good at?*

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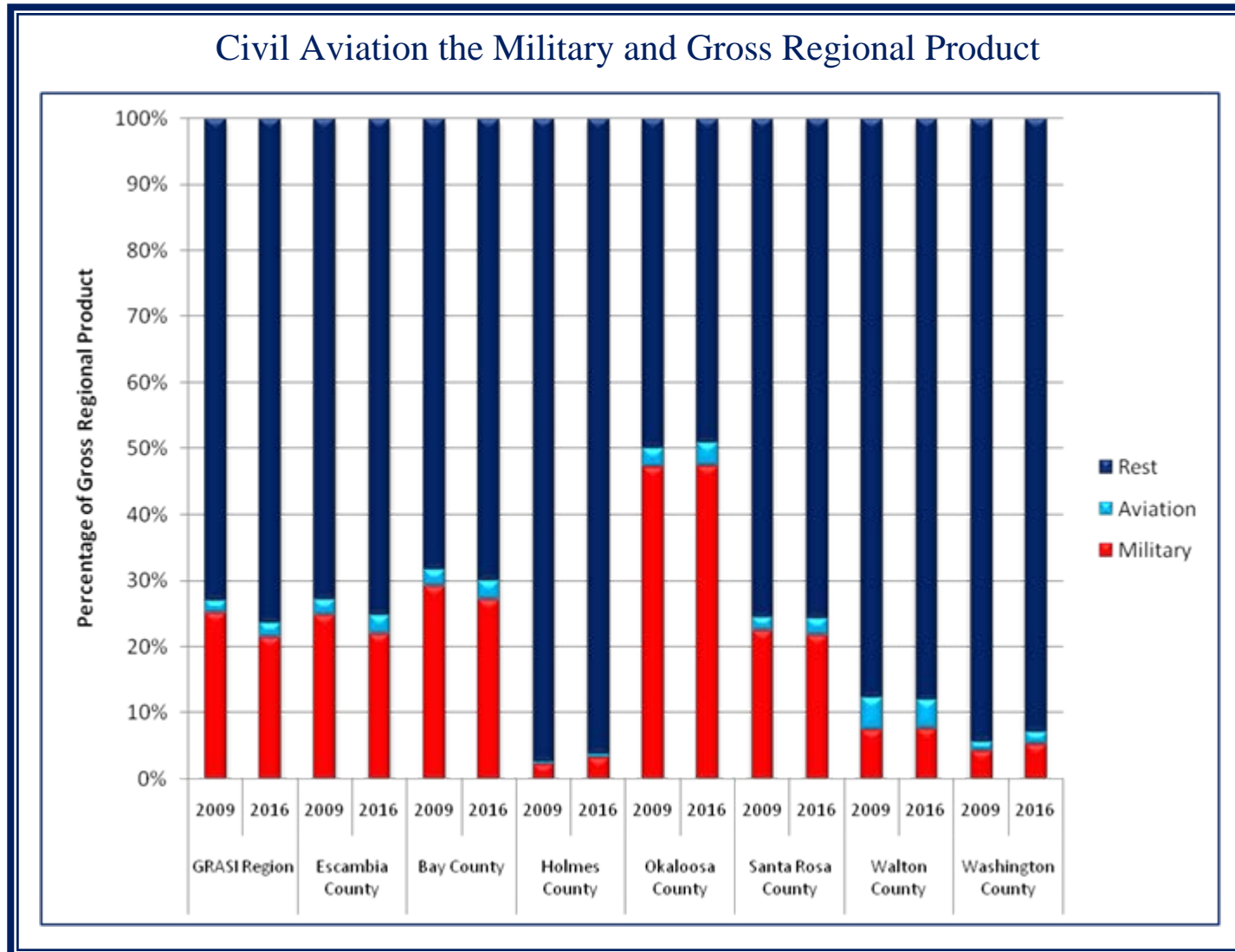
What are you good at? vs. *What do you want to be good at?*

Sixteen-County Northwest Florida Region – Sector Employment

Source: Regional Economic Modeling Incorporated PI +	1990		2000		2010		2019	
	Emp.	Rank	Emp.	Rank	Emp.	Rank	Emp.	Rank
Utilities	1,894	17	1,768	17	2,131	18	2,014	18
Construction	30,986	4	43,364	4	50,350	4	48,578	7
Manufacturing	22,322	6	22,597	6	21,654	10	19,908	10
Wholesale Trade	13,438	11	16,022	11	17,667	11	16,646	12
Retail Trade	64,604	1	81,825	1	87,245	1	86,020	1
Transportation and Warehousing	11,994	12	13,305	12	14,506	12	16,749	11
Information	10,257	13	14,401	13	13,238	13	13,351	14
Finance and Insurance	18,633	8	21,948	8	28,385	9	28,891	9
Real Estate and Rental and Leasing	14,921	10	26,476	10	41,921	8	46,453	8
Professional and Technical Services	22,216	7	35,651	7	47,981	5	55,345	4
Educational Services	3,531	16	5,915	16	8,639	15	9,881	15
Health Care and Social Assistance	43,941	2	61,478	2	71,371	2	83,241	2
Arts, Entertainment, and Recreation	6,652	15	10,381	15	12,380	14	14,083	13
Accommodation and Food Services	37,882	3	48,114	3	63,730	3	66,108	3

What are you good at? vs. *What do you want to be good at?*

Impact of the Military - Seven-County Northwest Florida Region



What is in store for the region?

Military Realignment Impacts

- For Escambia County –
 - Slightly Negative (BRAC losses at NAS Pensacola) with positive effects from AETC
- For Okaloosa County –
 - Highly Positive (BRAC gains offset 33rd Departure) Additional personnel also come with 2010 force restructure
- For Bay County –
 - Negative Effects (BRAC losses compounded by 2010 force restructure)

What is in store for the region?

Impacts of Military Realignments By Industry – Eglin Region

Source: Regional Economic Modeling Incorporated PI + as published in Eglin GMP	2009	2010	2011	2012	2013	2014	2015
Utilities	-4	-7	9	11	13	15	17
Construction	549	142	651	653	703	802	883
Manufacturing	-9	-17	27	28	27	25	25
Wholesale Trade	-15	-27	47	54	58	62	66
Retail Trade	-120	-245	485	547	616	678	752
Transportation and Warehousing	-7	-12	17	21	24	26	29
Information	-23	-40	65	78	87	96	106
Finance and Insurance	-31	-55	146	147	153	158	168
Real Estate and Rental and Leasing	-41	-72	107	119	131	139	149
Professional and Technical Services	-214	-389	618	782	903	1017	1155
Educational Services	-7	-9	26	29	33	36	41
Health Care and Social Assistance	-90	-164	375	415	469	521	587
Arts, Entertainment, and Recreation	-31	-56	90	107	123	137	154
Accommodation and Food Services	-86	-153	252	288	323	353	392

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Observations of a *Political Scientist!*

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**How does the current Education Structure support what you are good at
(and what you want to be good at)?**

Educating the Workforce of Tomorrow

- **Study commissioned by Florida's Great Northwest**
- **Provided an Education Gap Analysis for critical targeted sectors in the 16 county Northwest Florida Region.**



This project was supported by monies provided from federal funds.

Occupations Targeted For Analysis

➤ **Engineering Occupations**

- Computer software engineers, applications
- Computer software engineers, systems software
- Computer hardware engineers
- Aerospace engineers
- Civil engineers
- Electrical engineers
- Industrial and Industrial/Systems Engineers
- Mechanical engineers

➤ **Engineering Technicians**

- Aerospace engineering and operations technicians
- Electrical and electronic engineering technicians
- Industrial engineering technicians

➤ **Computer Related Occupations**

- Computer and information systems managers
- Computer systems analysts
- Database administrators
- Network and computer systems administrators
- Network systems and data communications analysts
- Computer programmers
- Computer specialists, all other
- Computer support specialists

Key Data Elements

- Demand Figures
 - Regional, State and National
 - Covers Period from 2009 through 2013
 - Derived from multiple sources including Economic Modeling Specialists Incorporated and Agency for Workforce Innovation
- Supply Figures
 - Derive from time series forecasts based on data obtained from Florida's Education Data Warehouse and the University Board of Governors
- Supply/Demand Ratios
 - Indicate the proportion of demand through 2013 that will be met by graduates supplied by colleges and Universities in the indicated region

Methodological Notes

- All regional and state data are for the period 2009 through 2013.
 - Demand forecasts are from secondary sources. Forecasts combine demand for new *and* replacement workers.
 - Supply forecasts are solely derived from Haas Center models.
- National-level data are annual data. They derive from secondary sources. Figures are not entirely comparable with Haas Center methods.

	Florida's Great Northwest Totals			State Totals			National Totals	
	<i>Demand</i>	<i>Supply</i>	<i>Difference</i>	<i>Demand</i>	<i>Total Supply</i>	<i>Difference</i>	<i>Annual Demand</i>	<i>2007 Graduates</i>
Engineering Occupations								
Computer Engineers Total	668	124	-544	8,178	1,715	-6,463	47,710	8,186
Computer software engineers, applications	357	*	*	4,742	33	*	29,960	*
Computer software engineers, systems software	220	*	*	2,690	*	*	14,970	*
Computer hardware engineers	91	*	*	746	*	*	2,780	*
Aerospace engineers	123	0	-123	364	1,752	1,388	2,700	4,180
Civil engineers	190	298	108	3,311	3,321	10	11,360	9,439
Electrical engineers	140	192	52	1,129	2,536	1,407	4,520	13,597
Industrial and Industrial/Systems Engineers	124	50	-74	1,986	1,231	-755	8,940	3,548
Mechanical engineers	136	51	-85	985	3,278	2,293	5,830	16,887
Engineering Technicians								
Aerospace engineering and operations technicians	21	0	-21	101	54	-47	250	415
Electrical and electronic engineering technicians	103	36	-67	1,149	378	-771	3,930	9,142
Industrial engineering technicians	45	1	-44	418	9	-409	2,210	2,611
Computer Related Occupations								
Computer and information systems managers	73	*	*	1,088	*	*	8,570	*
Computer systems analysts	425	*	*	5,308	*	*	27,950	*
Database administrators	74	*	*	1,065	*	*	4,690	*
Network and computer systems administrators	232	*	*	3,009	*	*	15,390	*
Network systems and data communications analysts	657	*	*	5,864	*	*	19,320	*
Computer programmers	192	*	*	2,619	*	*	9,080	*
Total Computer Related Occupations (Bachelor's Level)	1,653	2,555	902	18,953	9,981	-8,972	85,000	49,060
Computer specialists, all other	152	0	-152	1,106	0	-1,106	5,660	*
Computer support specialists	393	50	-343	6,205	702	-5,503	24,180	*
Total Computer Related Occupations (Associate Level)	545	50	-495	7,311	702	-6,609	29,840	31,186
Total Computer Related Occupations (All Levels)	2,198	2,605	407	26,264	10,683	-15,581	114,840	80,246

How does the current Education Structure support what you are good at (and what you want to be good at)?

	Florida's Great Northwest Totals			<i>Demand</i> State Totals			National Totals	
	<i>Demand</i> 2009-13	<i>Supply</i> 2009-13	<i>Difference</i>	<i>d</i> 2009-13	<i>Supply</i> 2009-13	<i>Difference</i>	<i>Annual Demand</i>	²⁰⁰⁷ <i>Graduates</i>
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Linkages

- Gap analysis resulted in over \$1 million in FGNW targeted scholarship funding to build programs to support what we are good at and what we want to be good at.
- Prime example of data driven approach to developing educational structure to support needs of area industry.

Tri-County Student Characteristics

Florida's Education Data Warehouse Reports that...

- 14,787 students graduated from HS in Gulf, Bay and Franklin Counties between 1998 and 2004
- 11,722 of these attended GCCC for at least one academic period
- 1,848 were awarded GCCC degrees or certificates and approximately 2/3 of those went on to four year colleges and universities

Comparing GCCC Graduates to HS Graduates using Genetic Matching

Variable	GCCC Graduate Mean N=698	HS Graduate Mean N=2694	HS Graduate Mean (Matched) N=672	Percent Balance Improvement
High School GPA	3.11	2.69		
Math FCAT Score	331.98	307.70		
Reading FCAT Score	323.05	300.29		
Absentee Rate	0.036	0.050		

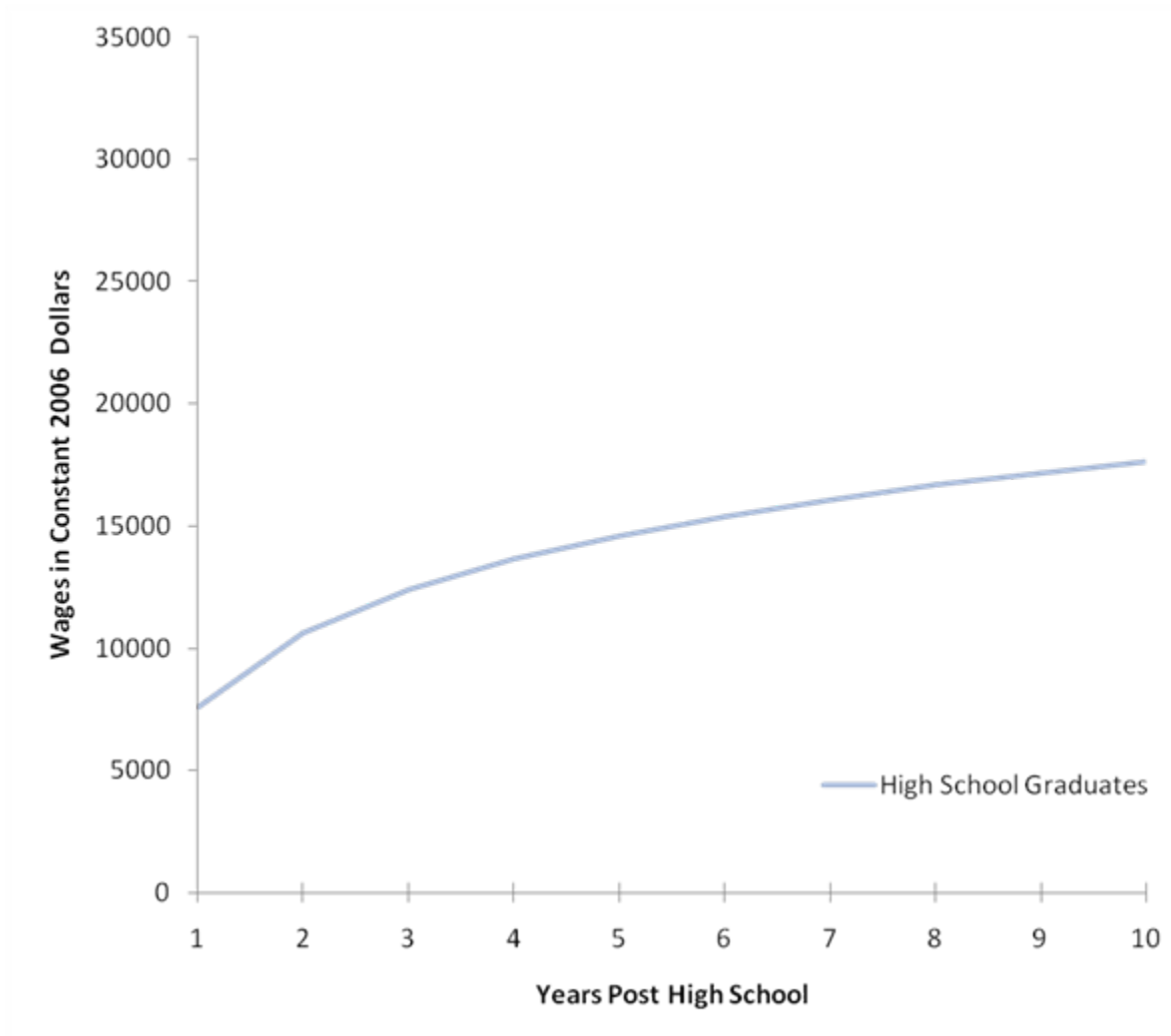
Comparing GCCC Graduates to HS Graduates using Genetic Matching

Variable	GCCC Graduate Mean N=698	HS Graduate Mean N=2694	HS Graduate Mean (Matched) N=672	Percent Balance Improvement
High School GPA	3.11	2.69	3.10	97.42
Math FCAT Score	331.98	307.70	332.30	98.28
Reading FCAT Score	323.05	300.29	324.83	86.43
Absentee Rate	0.036	0.050	0.035	91.28

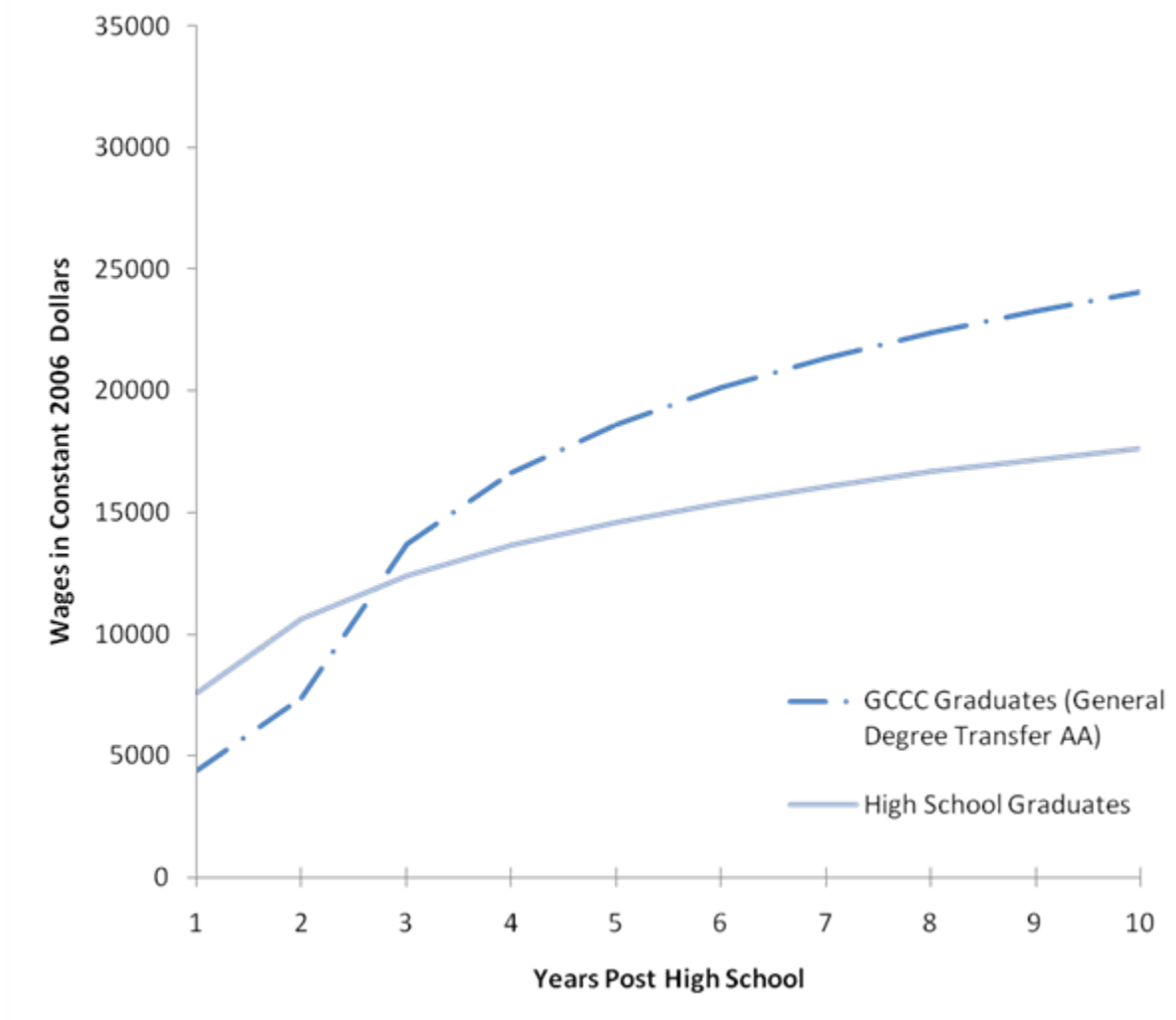
Student Attainment of Degrees and Certifications by Type

	Frequency	Percentage
General Degree Transfer	341	48.85
Correctional Officer	93	13.32
Nursing	36	5.16
Dental Assisting	25	3.58
Practical Nursing	25	3.58
Emergency Medical Technician	19	2.72
Fire Fighter II	18	2.58
Law Enforcement Officer	17	2.44
Drafting and Design Technology	14	2.01
Radiography	13	1.86
Computer Engineering Technician	12	1.72
Culinary Management	12	1.72
Physical Therapist Assistant	11	1.58
Respiratory Care	9	1.29
Total	645	92.41

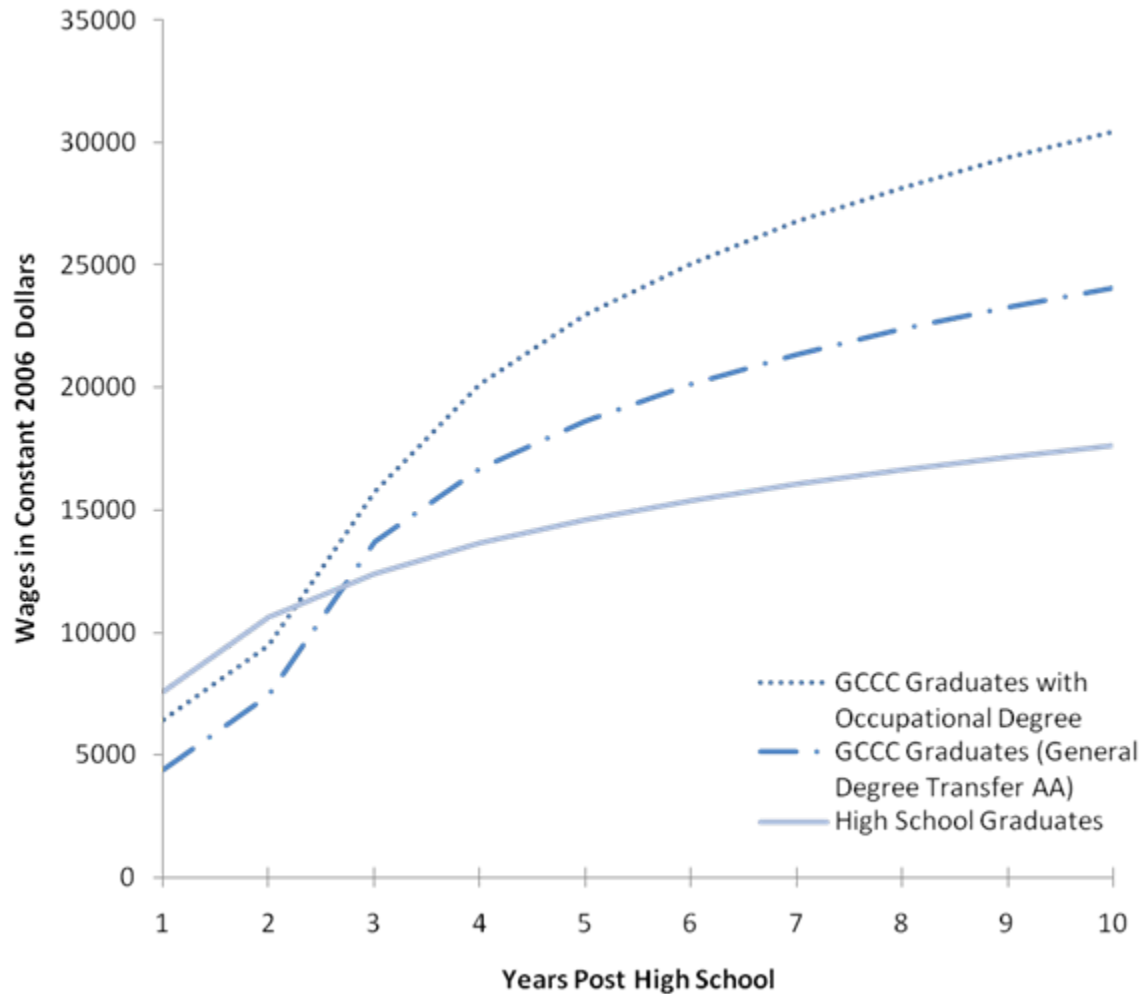
Measuring Wage Returns to Gulf Coast Community College Degrees



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Comparing Ten Year Average Earnings By Degree Type

	Ten-Year Earnings Total	Difference Between HS Diploma and GCCC Degree	Percentage Difference
High School Diploma Only	\$141,778.72	--	--
GCCC General Transfer Degree	\$171,864.73	\$30,086.01	21.2%
GCCC Occupational Degree	\$214,604.03	\$72,825.31	51.4%

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- Literature suggests that the relationship is both endogenous and self perpetuating.
 - Industry feeds off education and education feeds off industry (if the system is designed correctly)
 - Approach *must* be holistic.
- Education matters to industry.
 - If the educational system supports industry they are
 - More likely to remain in the region
 - More likely to relocate to the region

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- Education matters in terms of wage earnings – there is solid evidence of *true* value added. Thus
 - Adapting/encouraging the educational structure to support high-wage, high-growth fields:
 - Should –
 - Improve overall quality of life for the region
 - Attract further growth in the selected fields
 - Will –
 - Increase wage earnings for those who participate
 - Increase government revenues

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Personal Studies Referenced:

- Lewis, Christopher J., 2009. “Comparing the Wage Returns of High School Diplomas to Community College Degrees using Genetic Matching” – *working paper*

Haas Center Studies Referenced:

- Educating the Workforce of Tomorrow (with Florida’s Great Northwest)
- Emerald Coast Technology and Research Center Educational Requirements Study
(with the Okaloosa County EDC)
- The Economics of the Gulf Regional Airspace Strategic Initiative - Volume 1 - Baseline Economic Conditions (with SAIC)
- The Eglin Tri-County Growth Management Plan Atlas of Initial Conditions
(with HDR Engineering)
- The Economic Impact of Gulf Coast Community College on the Regional Economy (with Gulf Coast Community College)

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