CHMURAECONOMICS&ANALYTICS

Enhancing the Alignment of Higher Education with Long-term Workforce Needs

August 28, 2009

What Happens without Good Information?

- 2001 Enron scandal
- 2007 sub-prime mortgage
- Everyday, career choices

Clearly, Information is Critical to the Effective Functioning of Markets

- A core principle of economics is that markets are more **competitive**, and therefore more **efficient**, when **accurate information** is available to both **consumers and suppliers**…
- If consumers are **well informed**, they are in a better position to make **decisions** that are in their **best interest**.
  - Fed Governor Kroszner, 10/24/07 (regarding the mortgage market)
- Information will enhance workforce alignment; policy is needed to support it

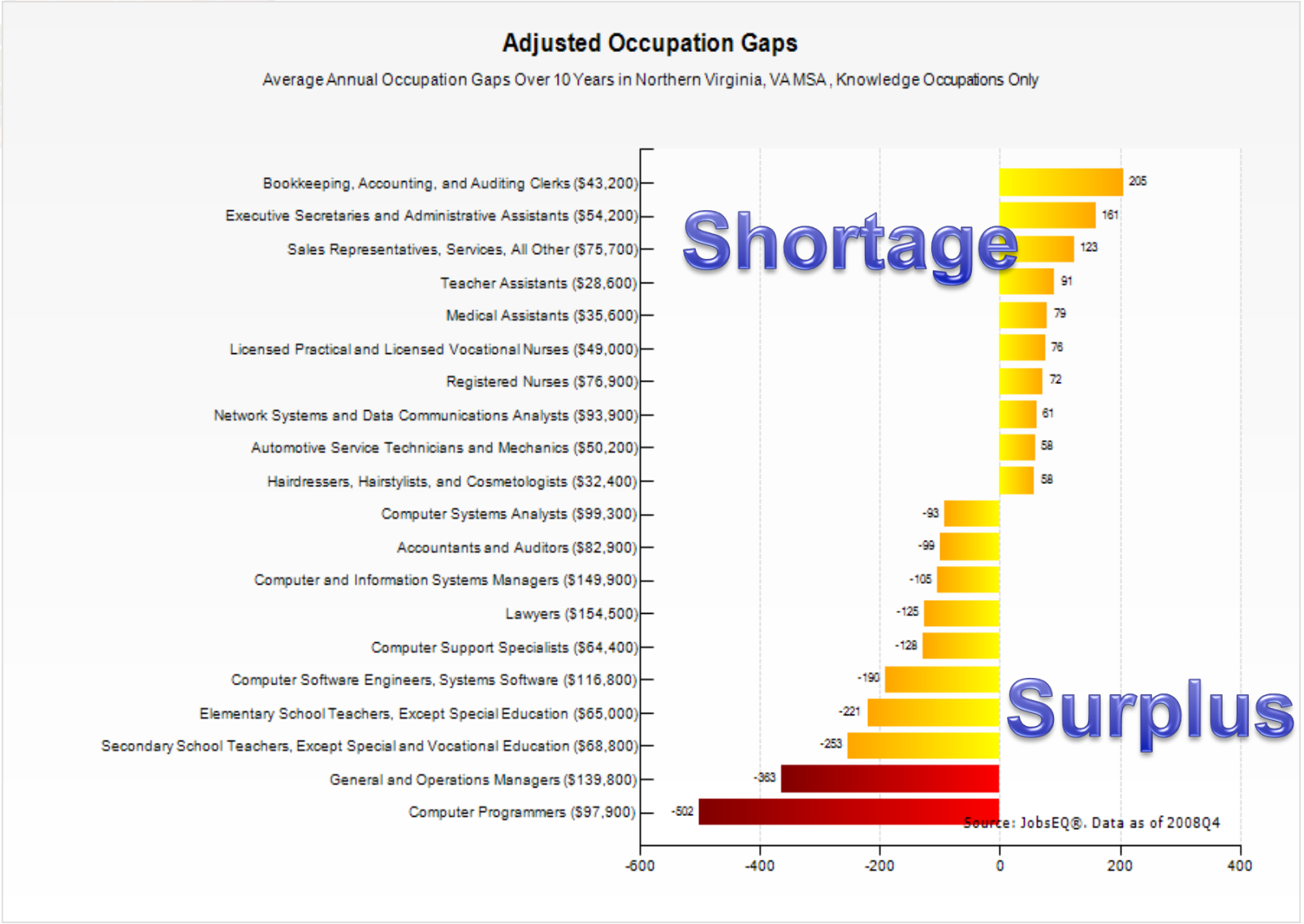
Today's Discussion: Education Attainment and Alignment to Firm Needs

- Is there misalignment in the state?
- Why is it important?
- How does misalignment occur?
- Are other states doing a better job?
- Can/should Virginia change?

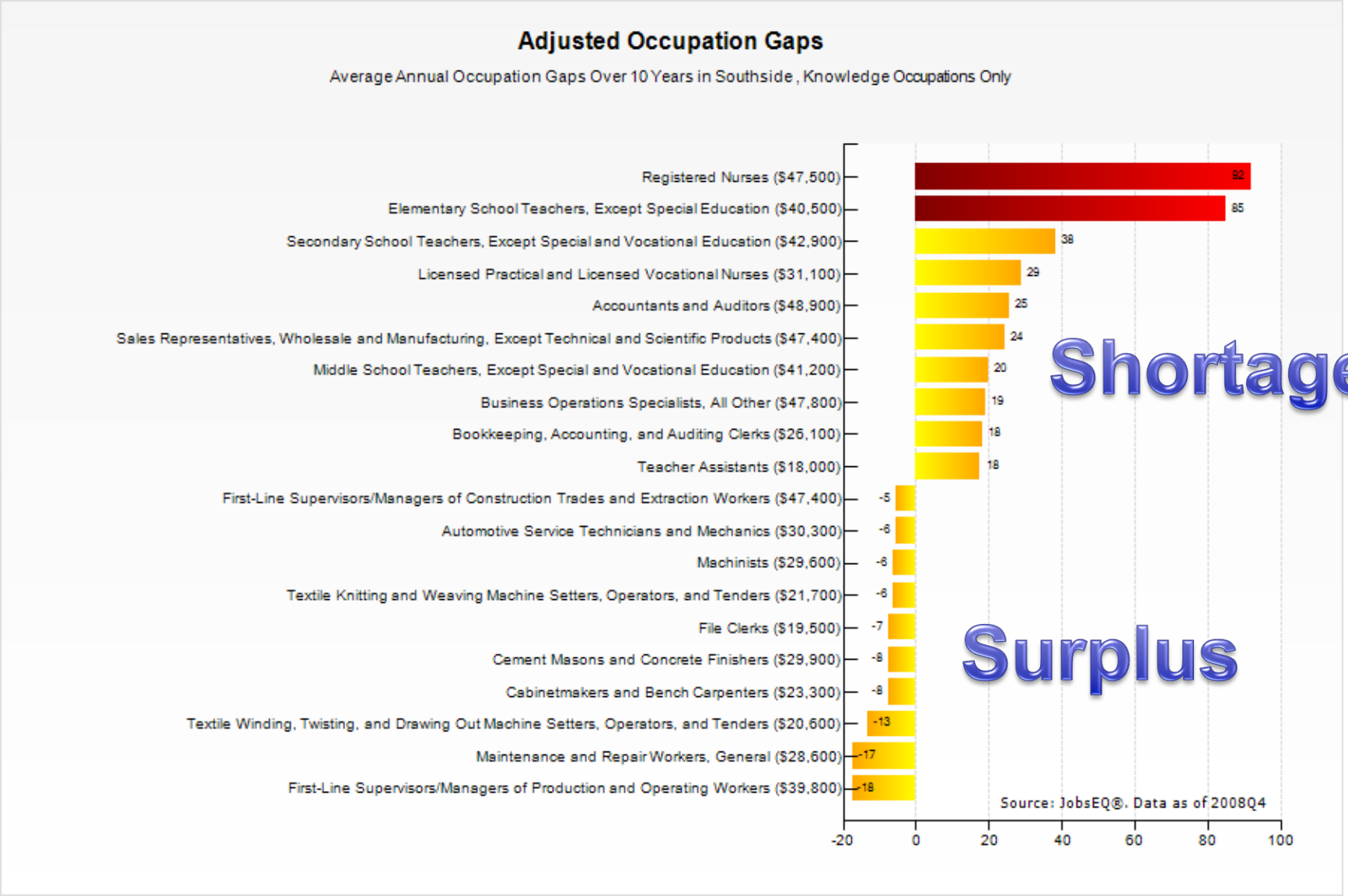
Is there Misalignment in Virginia?

- Yes
- Misalignment varies by region
  - State average masks regional issues

Occupation Gaps: Northern Virginia MSA



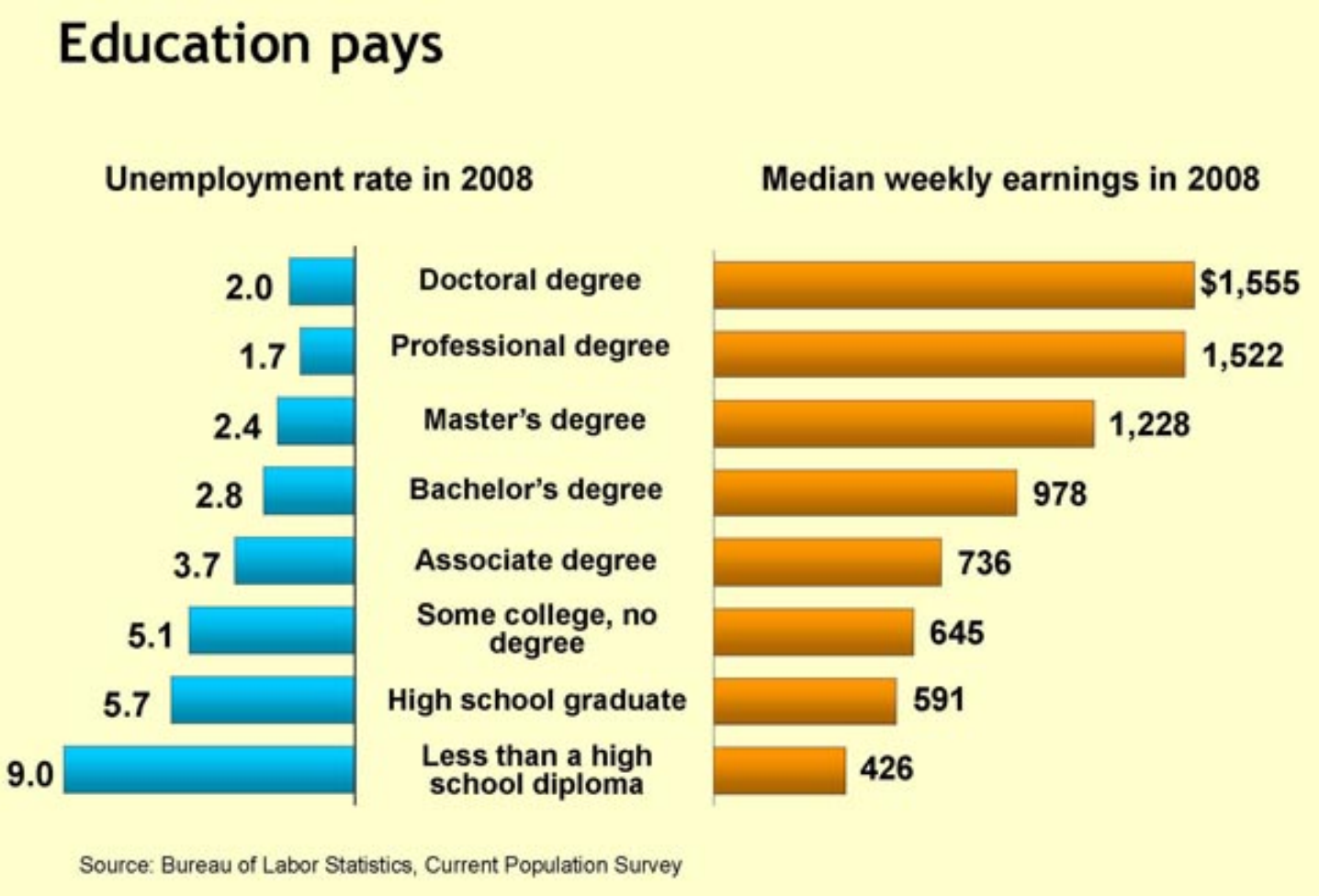
Occupation Gaps: Southside Tobacco Region



Why is Alignment and Education Attainment Important?

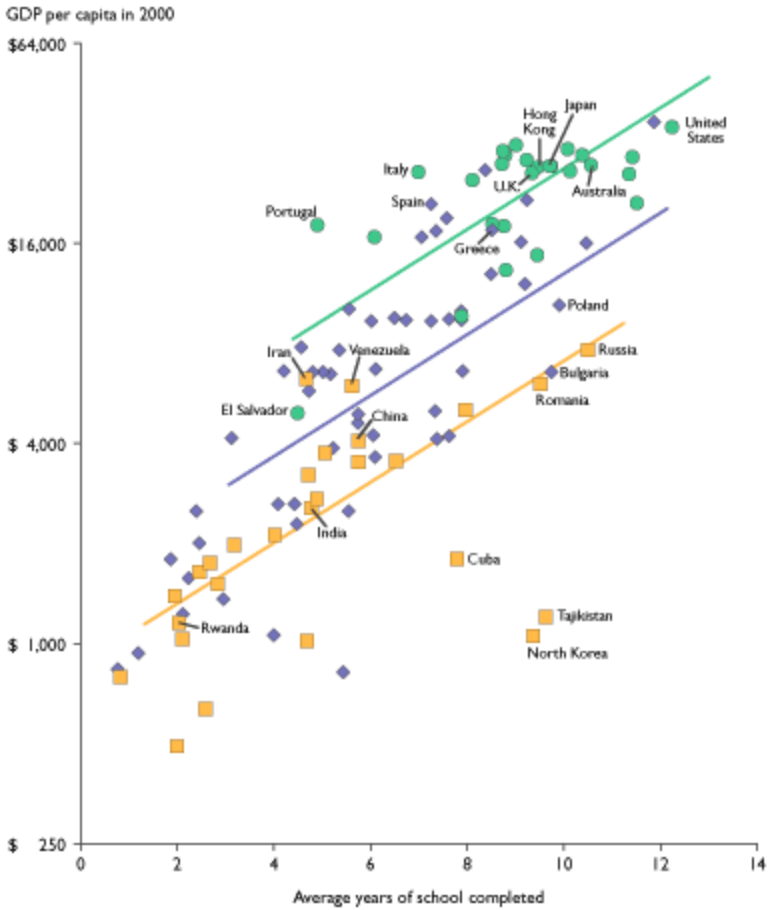
- Education attainment improves individual well being
- Education improves regional growth
- Alignment is needed to remain competitive
- Misalignment is costly

Individuals Benefit from Lower Unemployment and Higher Earnings



http://www.bls.gov/emp/emptab7.htm

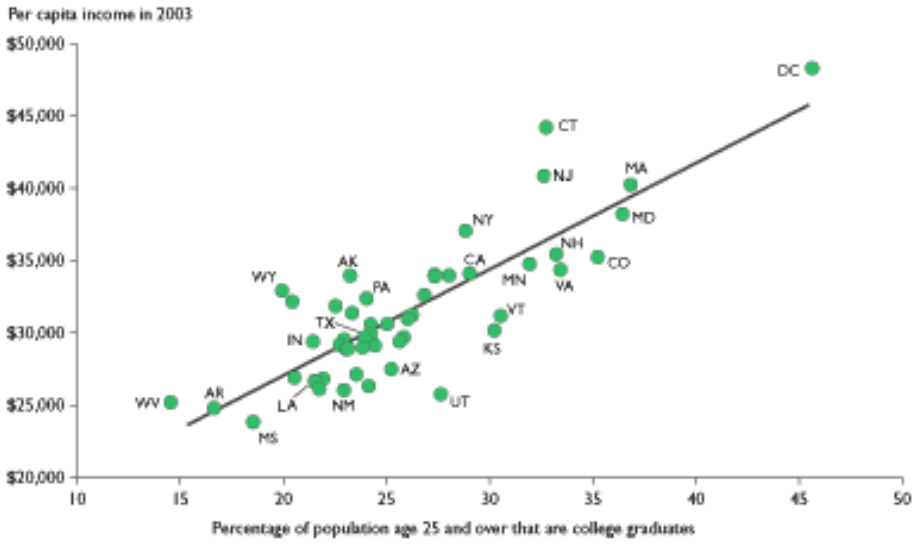
More Educated Countries are more Productive…Higher Living Standards



- "Free economies get the most out of education.
- The top quarter of the 108 nations in the Index of Economic Freedom (in green) cluster toward the top of the chart, indicating they're getting a lot of per capita GDP from years of schooling.
- The least-free quarter (in orange) tend to get less from their education, which pushes them toward the bottom of the chart.
- The remaining countries (in purple) make up the middle two quarters of the index."

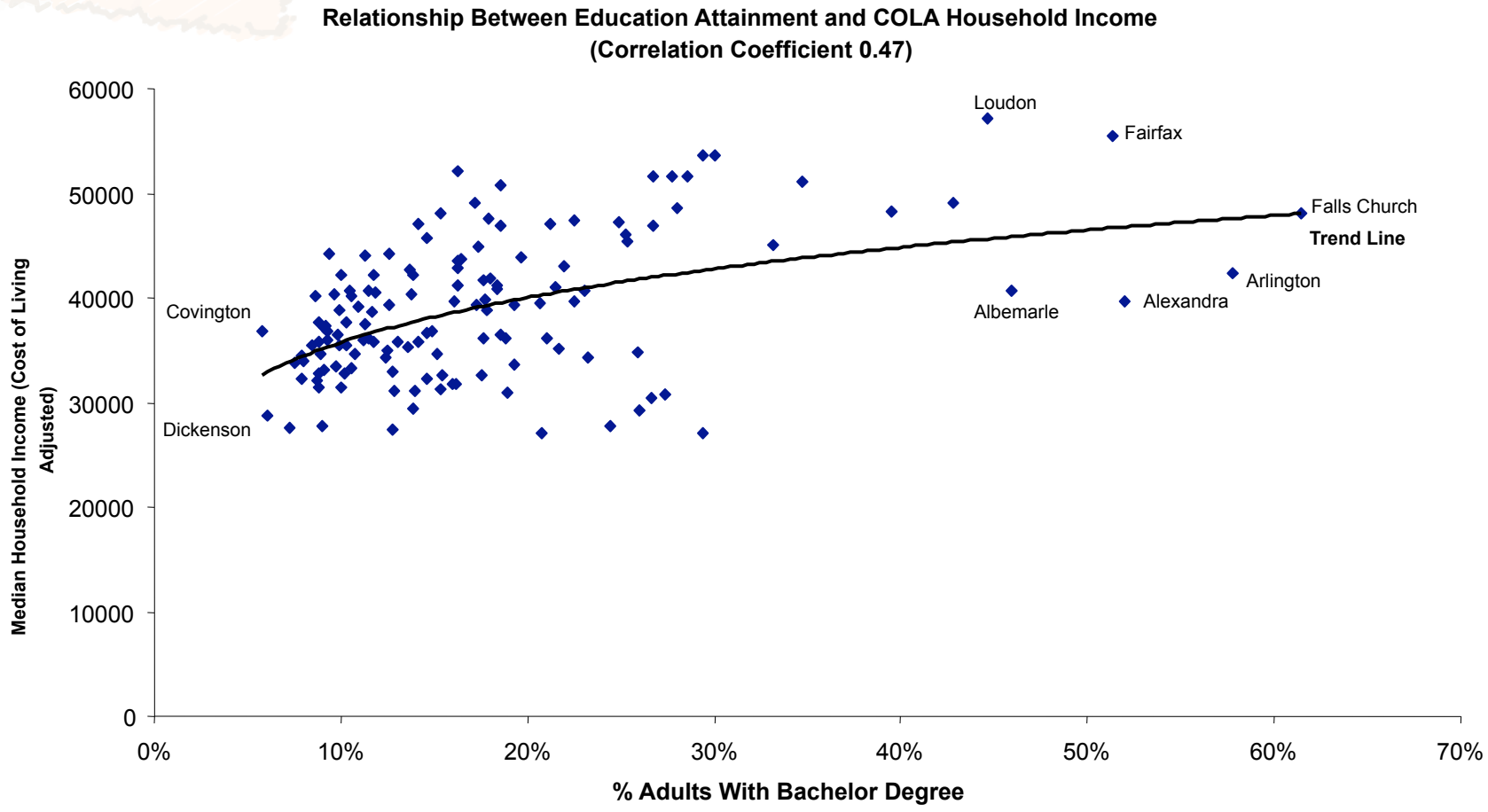
Source: 2004 Annual Report—Federal Reserve Bank of Dallas, *What D'Ya Know?*

States with more College Graduates Enjoy Higher Income



Source: 2004 Annual Report—Federal Reserve Bank of Dallas, *What D'Ya Know?*

Localities Benefit from Higher Education Attainment



Source: 2000 Census and Chmura

It is Costly to the State

	Savings From Number of Workers Affected[1]	Savings From Unemployment Insurance[2]	Savings From Lost State Taxes[3]	Total
Reduce Unemployed by 0.5%	597	$1,232,208	$240,591	$1,472,799
Reduce Unemployed by 1%	1,194	$2,464,416	$481,182	$2,945,598
Reduce Unemployed by 2%	2,389	$4,930,896	$962,767	$5,893,663
Reduce Unemployed by 3%	3,583	$7,395,312	$1,443,949	$8,839,261

[1] The July 2007 unemployment total of 119,437 in Virginia was used to estimate the number of workers affected. The most-recent data was not

[2] The unemployment insurance benefit was estimated by using the average weekly benefit in Virginia as of July 2007--$258. In this case, the worker receives weekly benefits of $258 for 8 weeks based on the 203 method.

[3] Lost state taxes are calculated by assuming that the unemployed were paid the average wage of $45,620 in Virginia. These individuals paid $2,193 in state taxes according to the 2008 tax tables (assuming a $3,000 standard deduction). It is assumed that they were unemployed for 8 weeks—the mean duration of unemployment in the nation during July 2007.

Alignment is Needed to Remain Competitive

- Firms need a ready workforce to expand into a region
  - Governor Kaine announced 500 new jobs for Prince George County late in 2007 saying "**Rolls-Royce's** decision to locate these operations here is a strong affirmation of the talent and professionalism of our educated, high-tech workforce and Virginia's competitiveness globally."
  - http://www.governor.virginia.gov/mediarelations/NewsReleases/viewRelease.cfm?id=545
- Firms need a ready workforce to remain in a region
  - **Goodyear Tire & Rubber** Company planned to invest $200 million to improve the technology at the Danville plant that would "keep more than 2,200 jobs in the region."
  - The Governor's Senior Advisor for Workforce, Virginia Jobs Investment Program, West Piedmont Workforce Investment Board, the Virginia Workforce Council and staff, the Virginia Community College System, and the U.S. Department of Labor worked with the company and other employers in the region to **develop a long-term workforce pipeline plan that will continue to train and retrain employees in the region.**
  - http://www.governor.virginia.gov/mediarelations/NewsReleases/viewRelease.cfm?id=692

Why is there Misalignment Between Workforce/Graduates and Firm Needs?

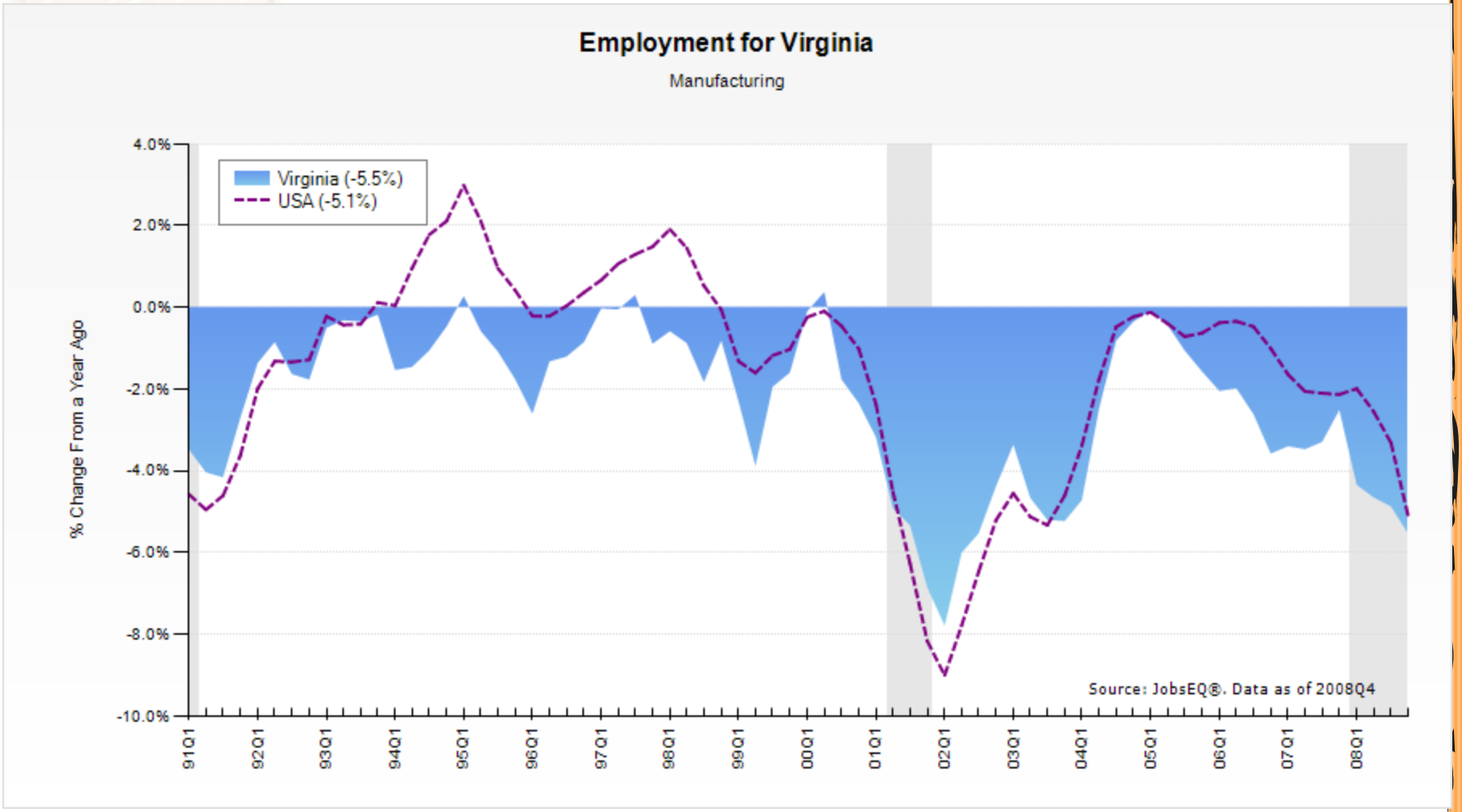
Not Controllable

1. Churn – creative destruction
2. Industries with high skills often growing; many with low skill are declining

Controllable

1. Lack of easy-to-understand/consolidate information
2. Lack of policies to drive change needed to reduce gaps

The General Problem: Industry Mix is Constantly Changing



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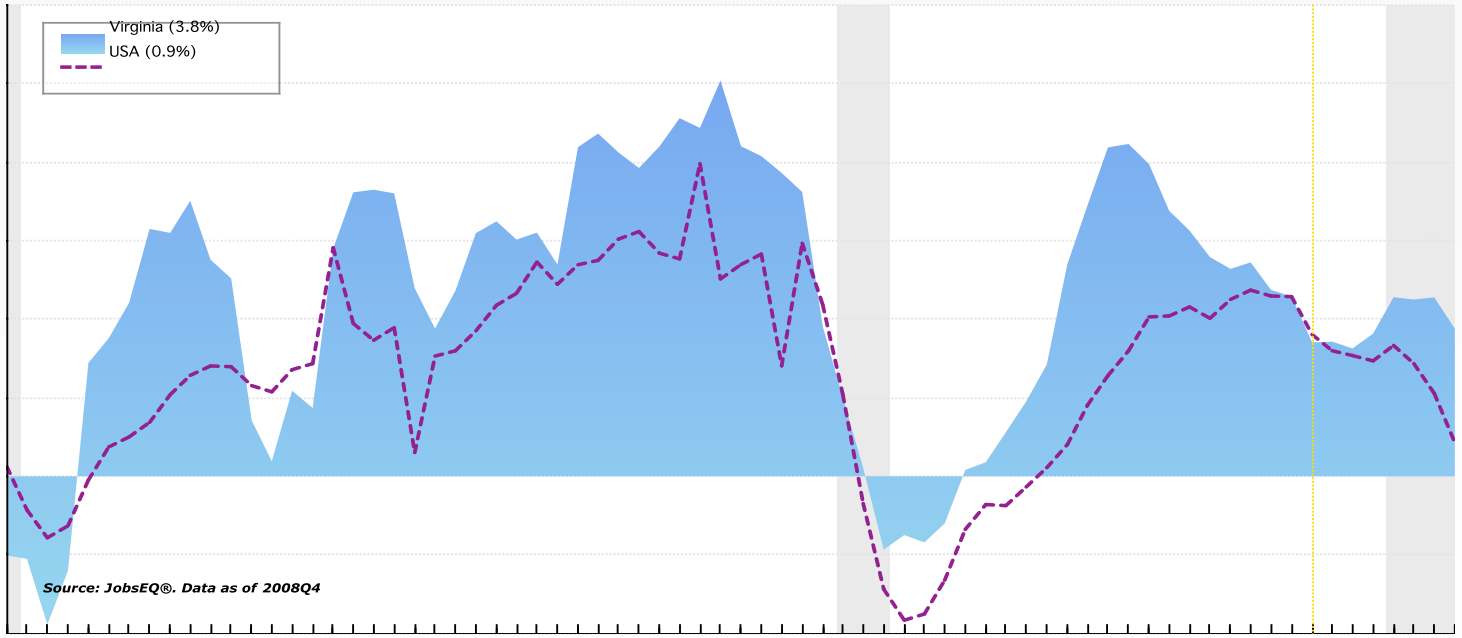
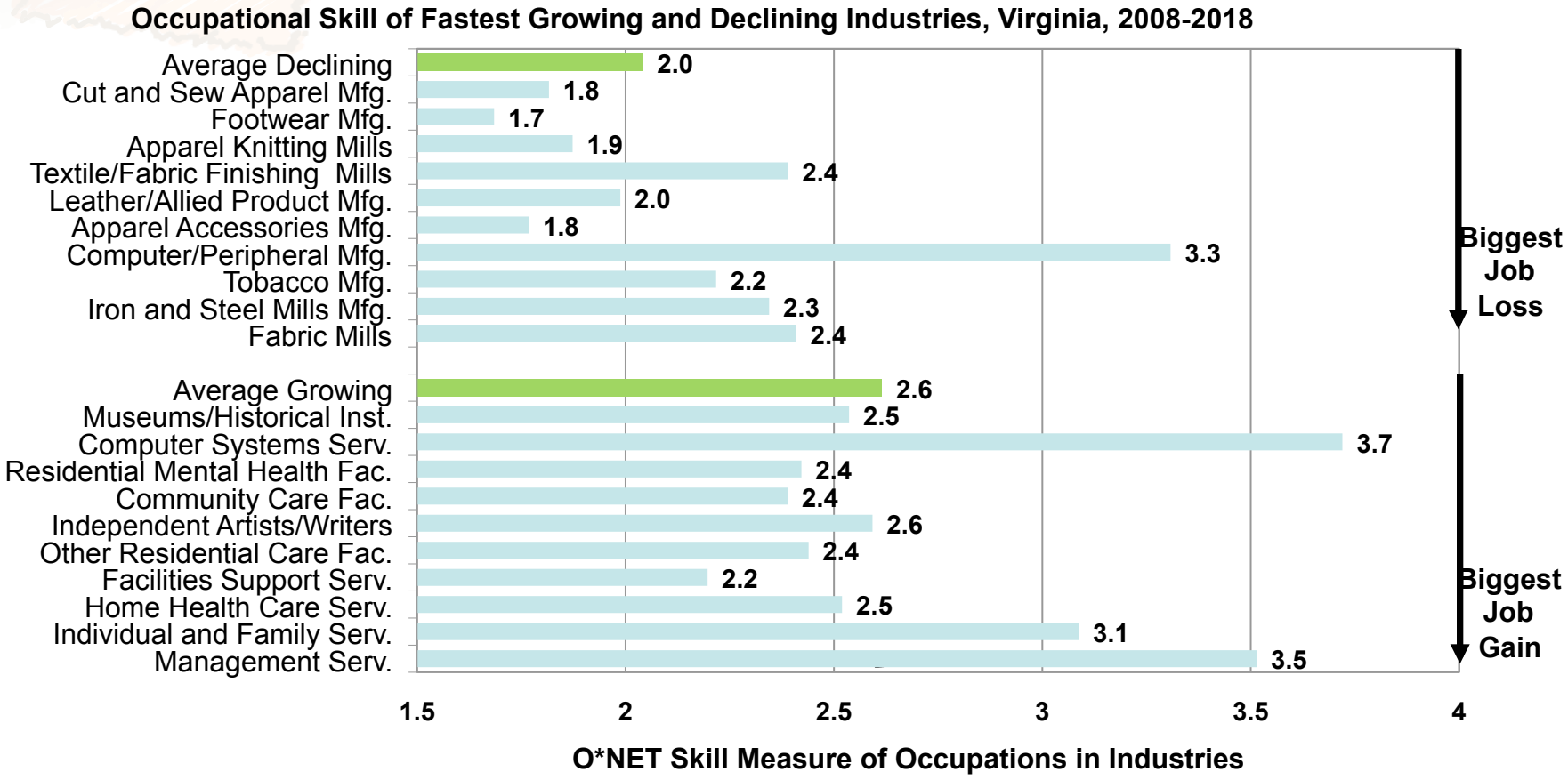


Higher Skills Needed for Fast Growing (Services) than Declining (Mfg) Industries



Source: JobsEQ®

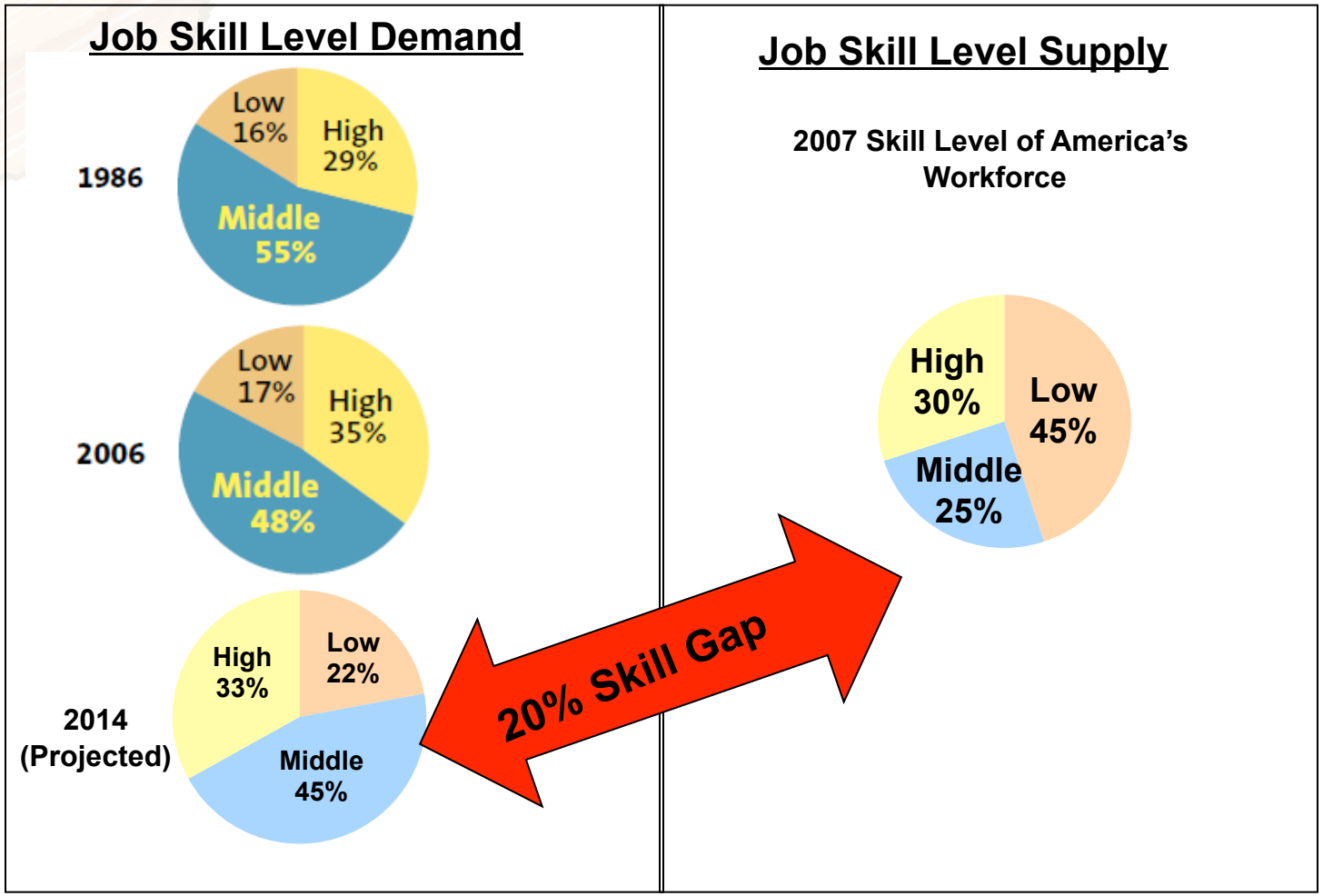
Changes in Policies Drive Occupation Needs

Annual Occupation Demand Projection - Northern Virginia Sub-region						
Occupations Groups	Baseline	BRAC Effect	Environ-Mental Effect	Defense Contractor Effect	Annual Total Demand	Annual Growth Rate
Architecture and engineering	2,648	391	157	639	3,836	4.5%
Arts, design, entertainment, sports, media	1,844	47	44	70	2,006	3.6%
Building and grounds cleaning, maintenance	4,879	12	29	19	4,939	3.4%
Business and financial operations	6,802	117	333	310	7,562	3.6%
Community and social services	2,078	8	64	1	2,152	3.9%
Computer and mathematical science	8,596	166	157	836	9,755	4.8%
Construction and extraction	5,770	38	96	329	6,232	3.7%
Education, training, and library	7,334	7	25	5	7,370	3.8%
Farming, fishing, and forestry	104	3	12	1	120	3.1%
Food preparation and serving related	12,659	4	20	0	12,682	4.6%
Health care practitioners and technical	5,001	29	43	96	5,169	3.7%
Health care support	2,565	6	8	89	2,668	3.7%
Installation, maintenance, and repair	3,791	53	55	145	4,045	3.2%
Legal	1,201	1	48	4	1,254	2.7%
Life, physical, and social science	1,796	49	97	179	2,122	4.2%
Management	5,845	71	135	238	6,289	3.4%
Office and administrative support	17,929	164	320	562	18,975	3.1%
Personal care and service	4,224	5	54	28	4,312	4.3%
Production	1,854	24	95	338	2,311	2.7%
Protective service	5,123	336	159	13	5,632	4.2%
Sales and related	13,694	23	42	206	13,964	4.2%
Transportation and material moving	5,689	11	79	75	5,854	3.4%
Total	**121,426**	**1,565**	**2,073**	**4,185**	**129,249**	**3.7%**

Source: Chmura Economics & Analytics

Source: Workforce Development System Gap Analysis and Asset Mapping for BRAC Impacted Areas in the MARC Region, August 2009.

Job Demand by Education/Training Shows a Mismatch by Skill Level



Source: ACT.

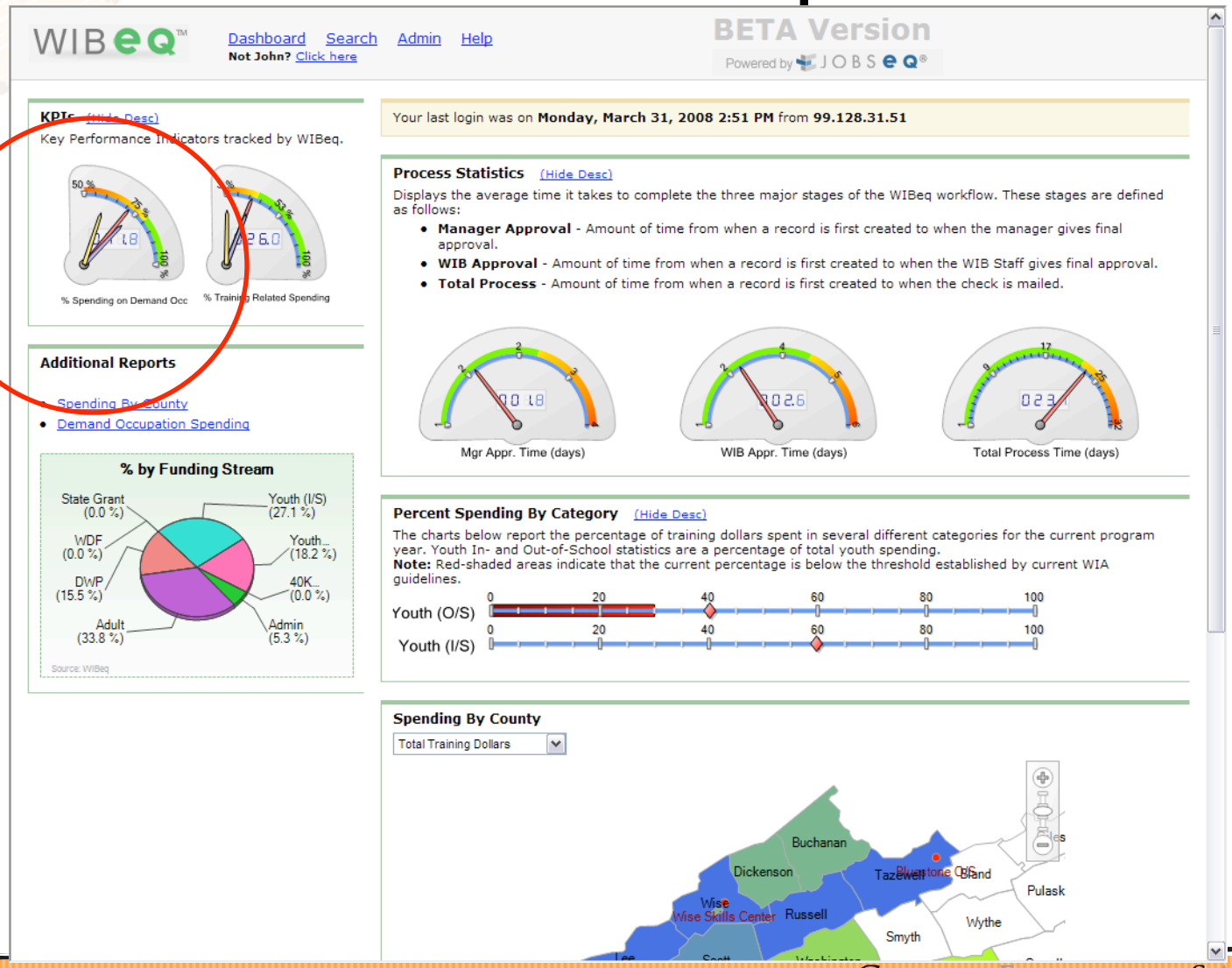
1) The **supply side** is based on education attainment. **Low Skill** = high school or less. **Middle Skil**l = two years of education/ training beyond high school. **High Skill** = four-year degrees and higher.

2) The **demand side** compares requirements of jobs based on education and/or skills need to be successful on the job. This information comes in part from the ACT Job Pro database and test and BLS O*NET information.

Mismatch of Skills From 'Creative Destruction' Are Amplified by Lack of Information

- Without information, resources don't flow to their best uses
- For the workforce, that means
  - Higher unemployment;
  - Longer periods of unemployment;
  - Leaving the region;
  - Retraining
- For firms, that means skills shortages
- For educators, that means some graduates will not find jobs in their selected field
- Information will enhance workforce alignment; policy is needed to support it

Information Drives Policies to Reduce Gap



Breakdown by Occupation

SOC	Title	3yr Gap*	Monthly Need**	Count***	Amount	% of Total
29-2061	Licensed Practical and Licensed Vocational Nurses	13		115	$132,046.67	26.9 %
11-3011	Administrative Services Managers	2		50	$68,983.62	14.1 %
51-4121	Welders, Cutters, Solderers, and Brazers	-24		20	$23,080.92	4.7 %
29-1111	Registered Nurses	92		16	$18,443.05	3.8 %
25-3999	All other teachers, primary, secondary, and adult	0		7	$16,466.03	3.4 %
25-1081	Education Teachers, Postsecondary	0		5	$12,293.85	2.5 %
49-9042	Maintenance and Repair Workers, General	-9		7	$11,962.46	2.4 %
49-9092	Commercial Divers	0		3	$8,830.00	1.8 %
29-2034	Radiologic Technologists and Technicians	5		5	$8,301.08	1.7 %
29-1126	Respiratory Therapists	2		5	$7,908.90	1.6 %
13-1199	Business Operations Specialists, All Other	29		2	$7,643.38	1.6 %
47-2031	Carpenters	-27		8	$7,419.24	1.5 %
29-2071	Medical Records and Health Information Technicians	6		9	$6,942.88	1.4 %
53-3032	Truck Drivers, Heavy and Tractor-Trailer	-75		5	$6,803.41	1.4 %
21-1093	Social and Human Service Assistants	17		3	$6,386.75	1.3 %
17-3024	Electro-Mechanical Technicians	0		5	$5,801.95	1.2 %
25-2021	Elementary School Teachers, Except Special Education	47		4	$5,587.22	1.1 %
43-6013	Medical Secretaries	4		5	$5,492.68	1.1 %
37-3019	Grounds Maintenance Workers, All Other	-1		7	$5,205.98	1.1 %
47-3012	Helpers--Carpenters	3		5	$4,969.18	1.0 %
25-2022	Middle School Teachers, Except Special and Vocational Education	17		2	$4,760.40	1.0 %
39-9011	Child Care Workers	1		3	$4,691.84	1.0 %

Source: WIBeq. Report generated: 3/31/2008 3:00:39 PM

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Source: WIBeq. Report generated: 3/31/2008 3:00:39 PM

43-4051	Customer Service Representatives	30	1	$336.81	0.1 %

What Policies Drive Higher Education Course Offerings?

CIP	Title	2 YR Graduates	4 YR Graduates	Occupa-tion Gap	Empl	Avg. Wages
11.0701	Computer Science	0	188	233	80,806	$101,500

SOC	Title	Supply	Demand*	Gap	Empl	Avg. Wages
11-3021	Computer and Information Systems Managers	15,025	14,161	-86	10,116	$131,320
15-1011	Computer and Information Scientists, Research	3,559	3,419	-14	2,180	$96,750
15-1031	Computer Software Engineers, Applications	50,613	54,981	437	33,022	$92,570
15-1032	Computer Software Engineers, Systems Software	39,871	39,437	-43	26,278	$106,740
15-1099	Computer Specialists, All Other	12,244	11,542	-70	7,753	$90,290
25-1021	Computer Science Teachers, Postsecondary	2,045	2,142	10	1,457	$70,930

Source: JobsEQ.
*10 year annual average demand.

What Policies Drive Higher Education Course Offerings?

CIP	Title	2 YR Graduates	4 YR Graduates	Occupa-tion Gap	Empl	Avg. Wages
12.05	Cooking and Related Culinary Arts, General (NEW)	7	0	-80	72,464	$26,000

SOC	Title	Supply	Demand*	Gap	Empl	Avg. Wages
35-1011	Chefs and Head Cooks	2,329	2,261	-7	1,767	$49,790
35-1012	First-Line Supervisors/Managers of Food Preparation and Serving Workers	27,649	27,723	7	21,990	$33,790
35-2012	Cooks, Institution and Cafeteria	12,382	12,159	-22	8,369	$23,570
35-2014	Cooks, Restaurant	34,495	34,036	-46	23,334	$22,110
35-2019	Cooks, All Other	343	322	-2	237	$30,360
35-2021	Food Preparation Workers	26,473	26,374	-10	16,767	$19,650

CIP	Title	2 YR Graduates	4 YR Graduates	Occupati on Gap	Empl	Avg. Wages
12.0503	Culinary Arts/Chef Training	382	0	-55	25,499	$24,100

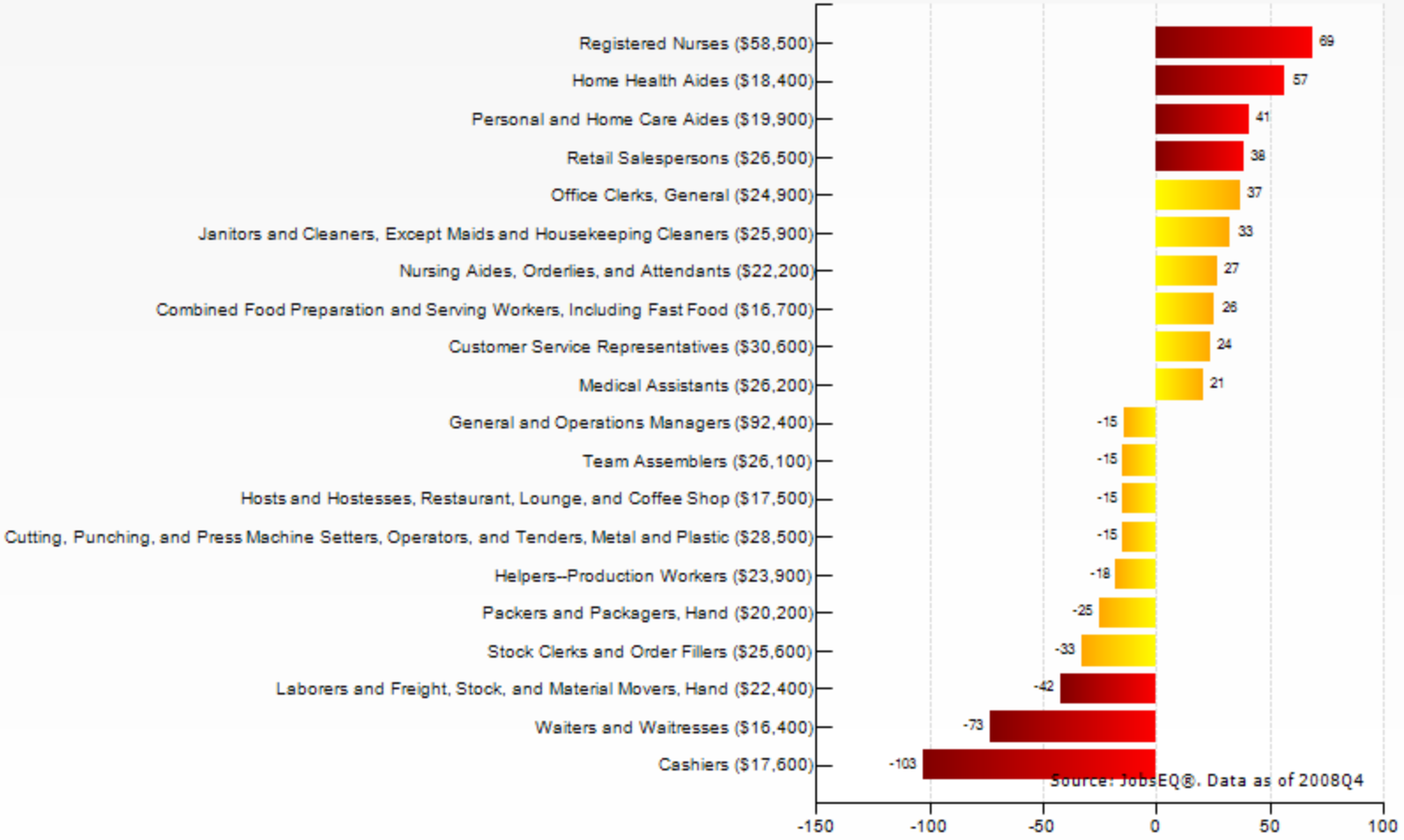
SOC	Title	Supply	Demand*	Gap	Empl	Avg. Wages
35-1011	Chefs and Head Cooks	2,329	2,261	-7	1,767	$49,790
35-2013	Cooks, Private Household	224	218	-1	160	$29,206
35-2014	Cooks, Restaurant	34,495	34,036	-46	23,334	$22,110
35-2019	Cooks, All Other	343	322	-2	237	$30,360

Source: JobsEQ.
*10 year annual average demand.

Are Other States Doing a Better Job?

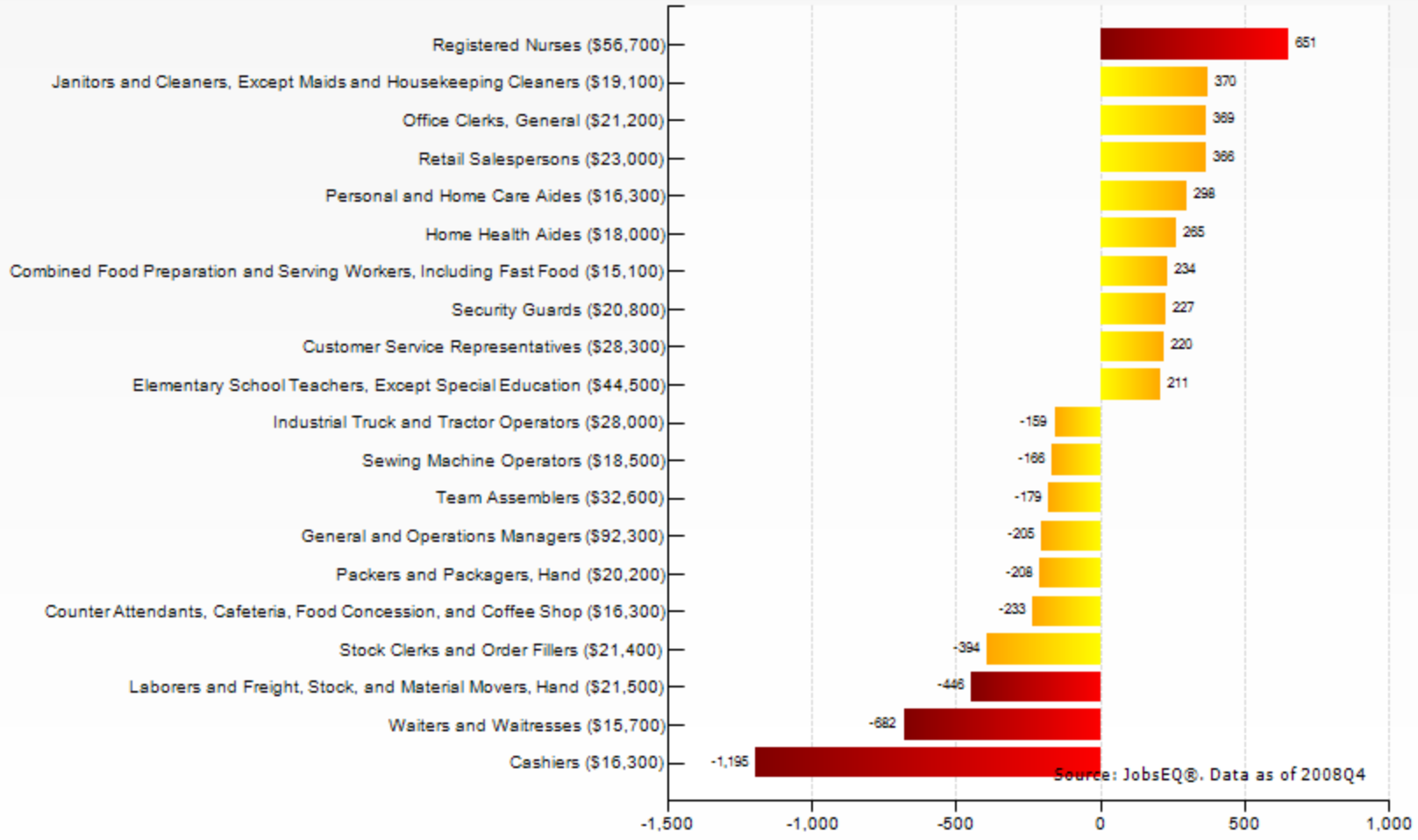
Adjusted Occupation Gaps

Average Annual Occupation Gaps Over 10 Years in Canton-Massillon, OH MSA



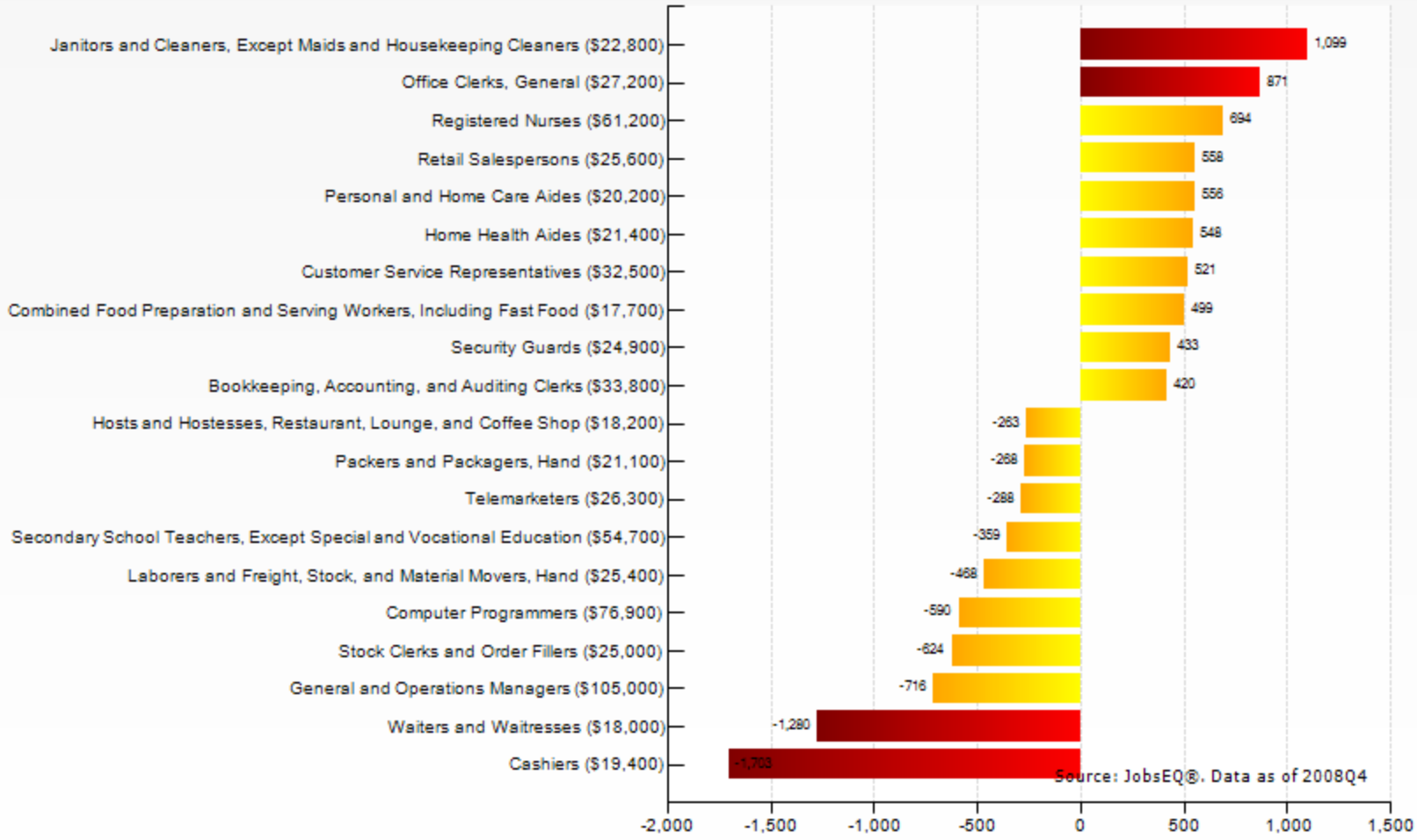
Adjusted Occupation Gaps

Average Annual Occupation Gaps Over 10 Years in Alabama



Adjusted Occupation Gaps

Average Annual Occupation Gaps Over 10 Years in Virginia



Policies: Louisiana

- Create a Knowledge-based, Innovation-driven Economy
  - Louisiana must remodel its economy. Future quality of life in this state depends on our ability to create a well-rounded economy that builds wealth, supports increasing numbers of high paying jobs, and develops, retains and attracts educated citizens.
- Utilize a performance-based formula to fund higher education.
  - Reward student outcomes. Increase by 10,000 Louisiana's annual production of degrees and certificates
  - Incentives for colleges and universities to produce degrees in high-demand workforce fields.
  - Incentives for increasing degrees/certificates to low-income and minority students.
  - Rewards higher education systems for their success in securing external research dollars.
  - http://blueprintlouisiana.org/index.cfm?md=homepage&tmp=subhome&subHomeCat=economy

Policies: Massachusetts

- Improved coordination with K-12 and early education
  - Remediation issues. New task force to identify additional steps we can take to make sure our high school students, their teachers, and their guidance counselors understand what it takes to be ready for college
  - Dual enrollment programs
  - Building a tracking system that can follow a student from high school into and through college, so that we will be able to determine what aspects of a particular student's preparation may have been incomplete and use that information to work with our colleagues in that student's high school to strengthen the pre-college curricula
- Aligning higher education programs with Commonwealth's workforce needs
  - Currently working to achieve this kind of alignment in two key areas:
    - Nursing and Allied Health, and
    - Science, Technology, Engineering and Mathematics—the so-called STEM fields.
  - There is more to be done in this area. My goal is to make sure that in every region of our state the programs and majors offered by our institutions are developed with attention to the economic character and needs of that area.
- *Delivered by Commissioner Richard M. Freeland on March 23, 2009, before the Joint Committee on Higher Education*

Policies: Indiana

- Focus on quantity, quality and economic alignment of the entire workforce
  - Do we have the enough workers to meet the needs of our economy
  - Do they have the right skills for a 21st century knowledge economy
  - Does the skill set of our workforce align with the emerging jobs of today and tomorrow
- Be Community centered, focusing on the needs of the regional economy and business
- *Illinois Workforce Partnership, "Workforce Development for a New Century," Adopted August 4, 2006*

Policies: Virginia

- Improve alignment between higher education and the Commonwealth's workforce needs
  - Establish advisory council with higher education and industry to identify statewide needs
  - Develop courses and training geared toward specific industry needs in high-growth occupational areas
  - State Council of Higher Education for Virginia 2007-13 Strategic Plan

Tools

- ‘Snapshot’ reports to address demand occupations and regional needs but absence of dynamic, publically available tools
- 

Is More Change Needed and Can Virginia Change?

Does Virginia Need Change?

- Are Virginia's workforce needs sufficiently integrated into higher education planning and development?
- What organizations—state and regional—are best positioned to foster stronger alignment between workforce needs and higher education?
- Should state funds be used to expand curriculum where surplus workers exists?
- Should students be more informed before career decisions?
- Should higher education institutions align courses to student preference?
- Should financial aid target only demand occupations?