

Mapping out your Career Path... with a focus on GIS

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The “secret” to a successful, rewarding and fulfilling career?
Ancient wisdom from Socrates says it best – “Know Thyself and...”

My Goals for Today...

- Provide you with information to help you consider whether a career in GIS or GIS-related areas might be interesting for you
- Weave enough general career advice into this presentation to still be useful to those who may **not** wish to pursue a GIS career

“People with clear, written goals, accomplish far more in a shorter period of time than people without them could ever imagine.” ~ Brian Tracy

So, who is Steve Harmon anyway?

A snapshot of my life, so far...

- Married with one child, an 18-year old daughter
- Gen-Xer, 38 years old - born in Bridgton, Maine in 1970 (man that seems old!)
- Graduate of Lake Region High School ('89)
- BA in Geology/Chemistry from UMF ('95)
- MA in Geography from the University of Nebraska at Omaha ('99)

You may be thinking, if I am going to listen to Steve's advice...

Where has this guy worked anyway?

- Meter Reader / Installer for CMP
(two years - '95 to '97)
- Teaching / Research Assistant at UNO
(two years - '97 to '99)
- Scientist for Brown and Caldwell
(two years - '00 to '01)
- GIS Coordinator for Maine DEP
(six years - '01 to '07)
- GIS Manager at First Wind / UPC Wind
(one and a half years – '07 to '09)

Volunteering!

My Service-Orientated GIS Activities

Volunteering is a sign of a well-balanced career and life...

- Current Board Member and Treasurer of the Maine GIS User Group (MEGUG)
- Current Volunteer GIS Manager for the Cumberland County EMA
- Volunteer GIS Analyst on projects with the Cumberland County Sherriff's Department
- Countless short-term volunteer projects with groups like 4-H, Fire Departments ...

It is also an excellent way to begin a career transition...

What to Consider for your Career?

From Richard N. Bolles “What Color is Your Parachute?”

- 1) **Skills**
- 2) **Geography**
- 3) **Interests**
- 4) **People Environments**
- 5) **Values, Purposes, and Goals**
- 6) **Working Conditions**
- 7) **Salary & Level of Responsibility**

What to Consider for your Career?

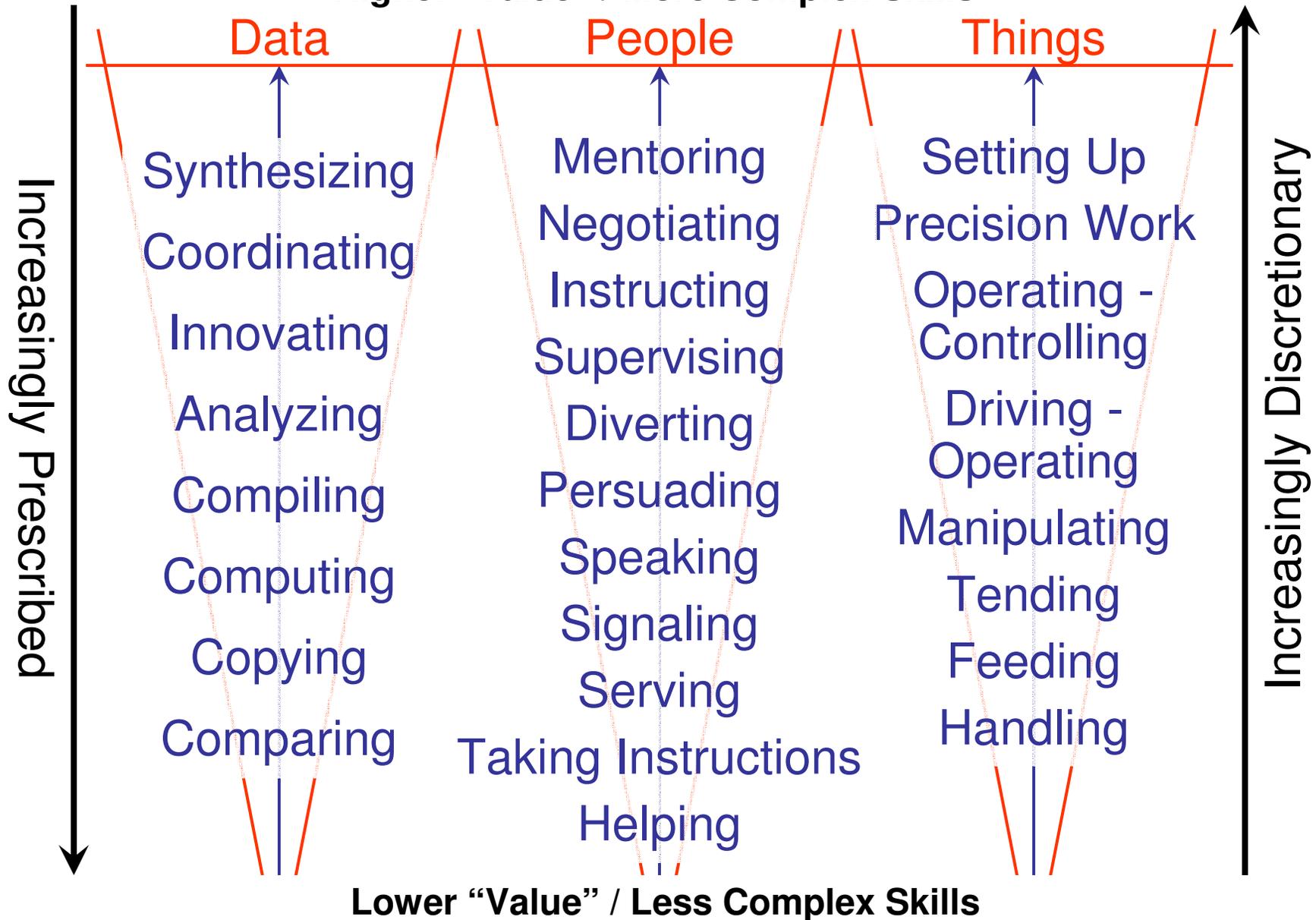
Skills

- Skills are the “atoms” of your career choice – everything is built upon them
- Functional skills are transferable to any job
- Skills **are not** traits or styles: being “detail orientated” is not a skill, it is a style of working
- Skills have different levels of complexity
- Some useful skills for most any (GIS) Career:

Classifying, Editing, Illustrating, Integrating, Communicating
Investigating, Designing, Analyzing, Computing, Planning,
Conceptualizing, Programming, Symbolizing, Improvising
Trouble-Shooting, Tutoring, Modeling, Synthesizing, Typing

Skill Families and Complexity

Higher "Value" / More Complex Skills



What to Consider for your Career?

Geography

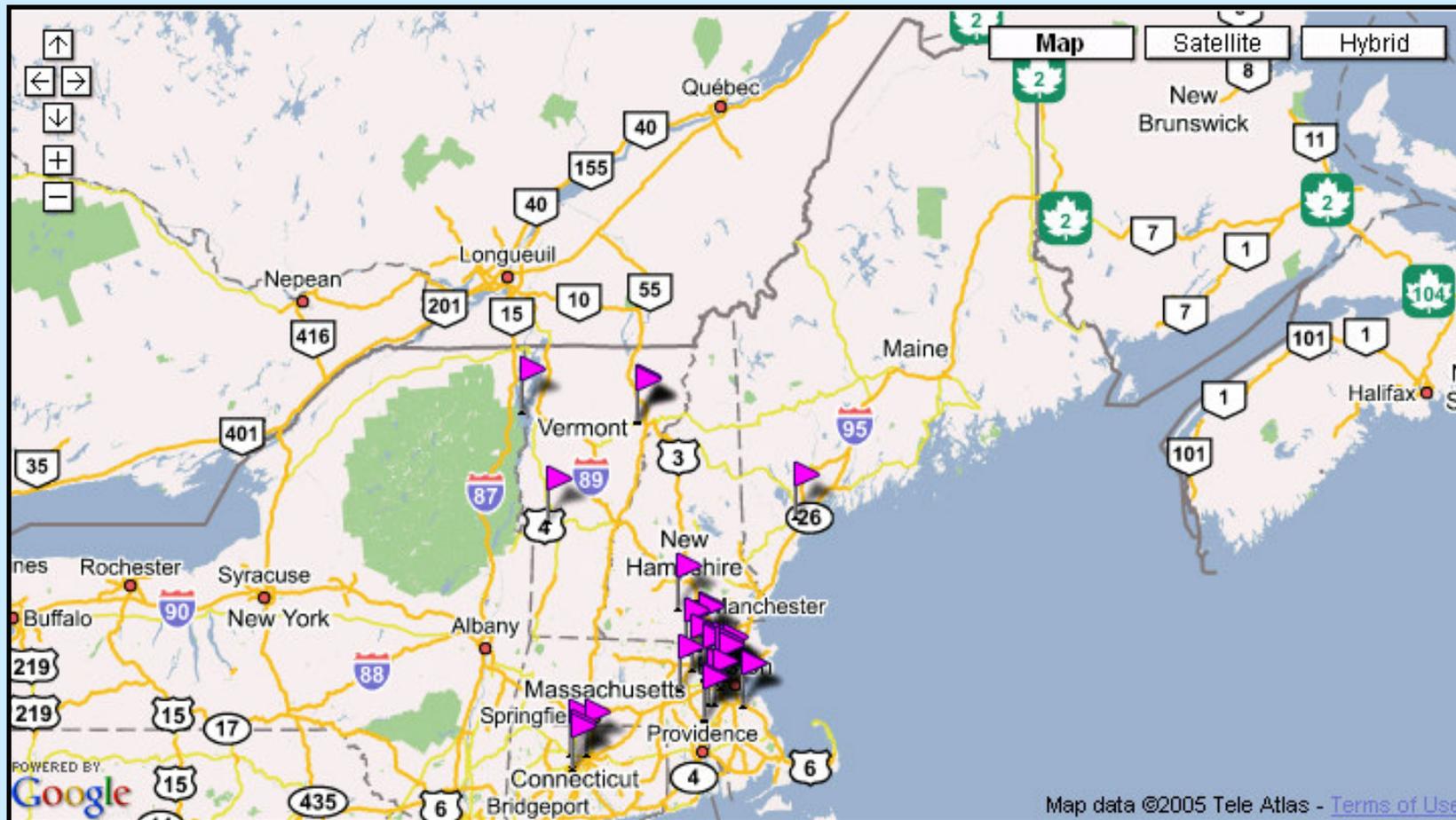
- Easy for us GISers right? Maybe... not...
- Bolles calls this the “Geography of the Heart”
- The most important question to ask yourself: “Where do you most want to use your skills?”

vs.

- The always practical, but often disappointing “Where are GIS jobs located anyway?”
- I can easily help you with the second part (and add a 4th dimension to this year’s presentation...)

29 New England Jobs on Monster.com Found via the Keyword “GIS” on 4/1/09

CT = 3, MA = 20, ME = 1, NH = 2, RI = 0 and VT = 3 (Posted 2/3 to 4/1/09)



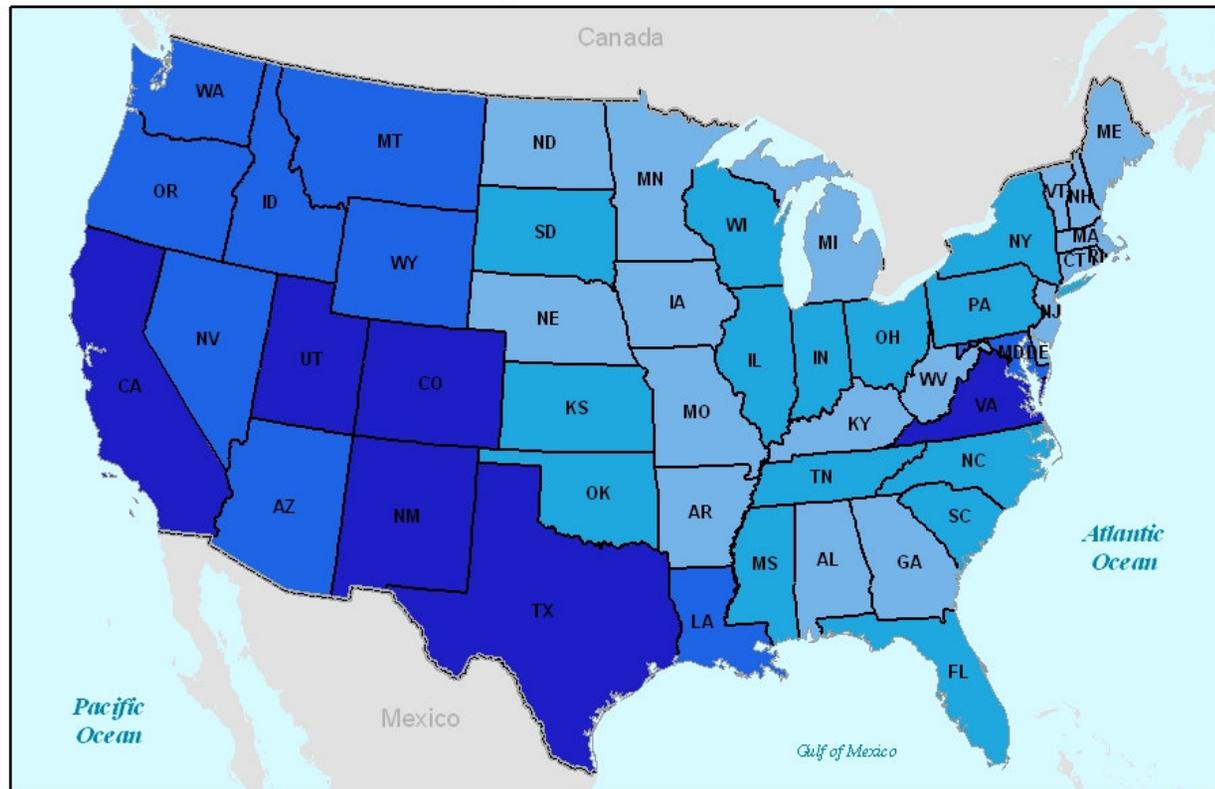
Information from USAJOBS.com

Opportunities with the Federal Government

Job Posting Counts by State

As Listed on www.USAJOBS.com on 4/1/09

258 Total Postings

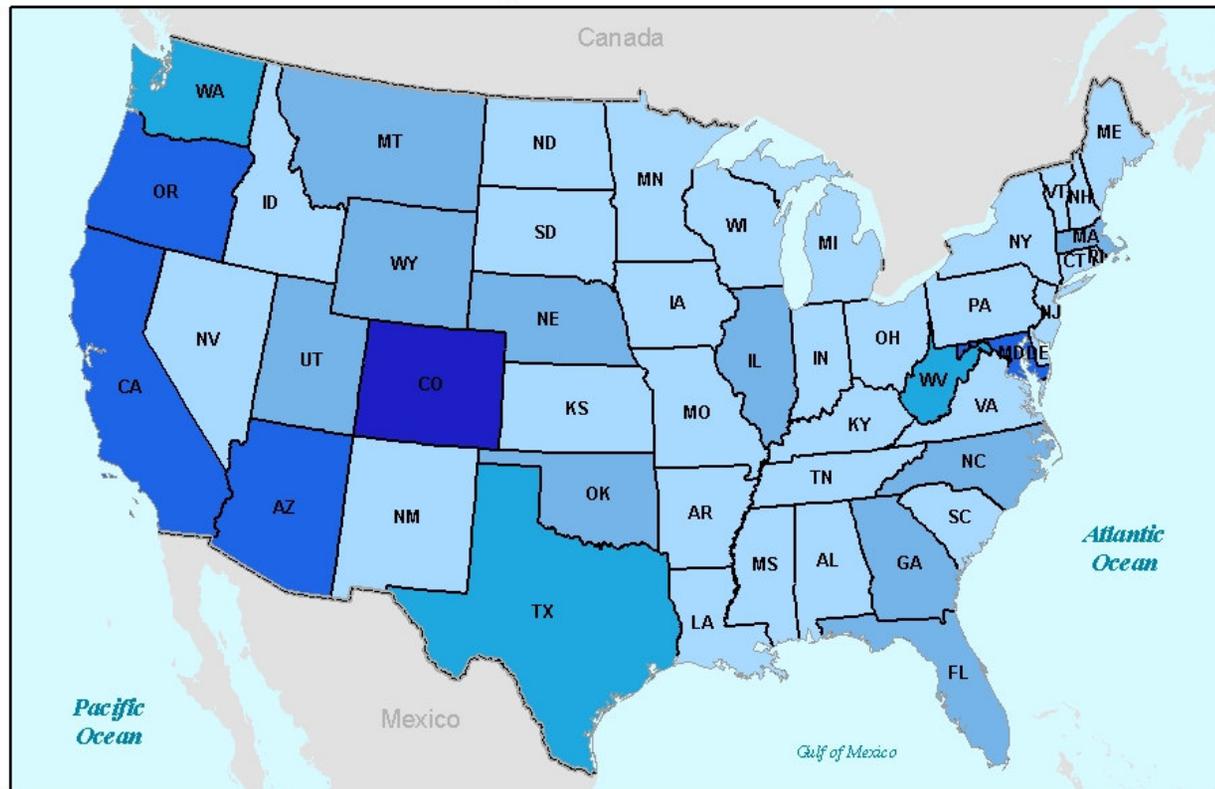


Last Year's Information from USAJOBS.com Past Opportunities with the Federal Government

Job Posting Counts by State

As Listed on www.USAJOBS.com 2/27/08 to 4/26/08

101 Total Postings



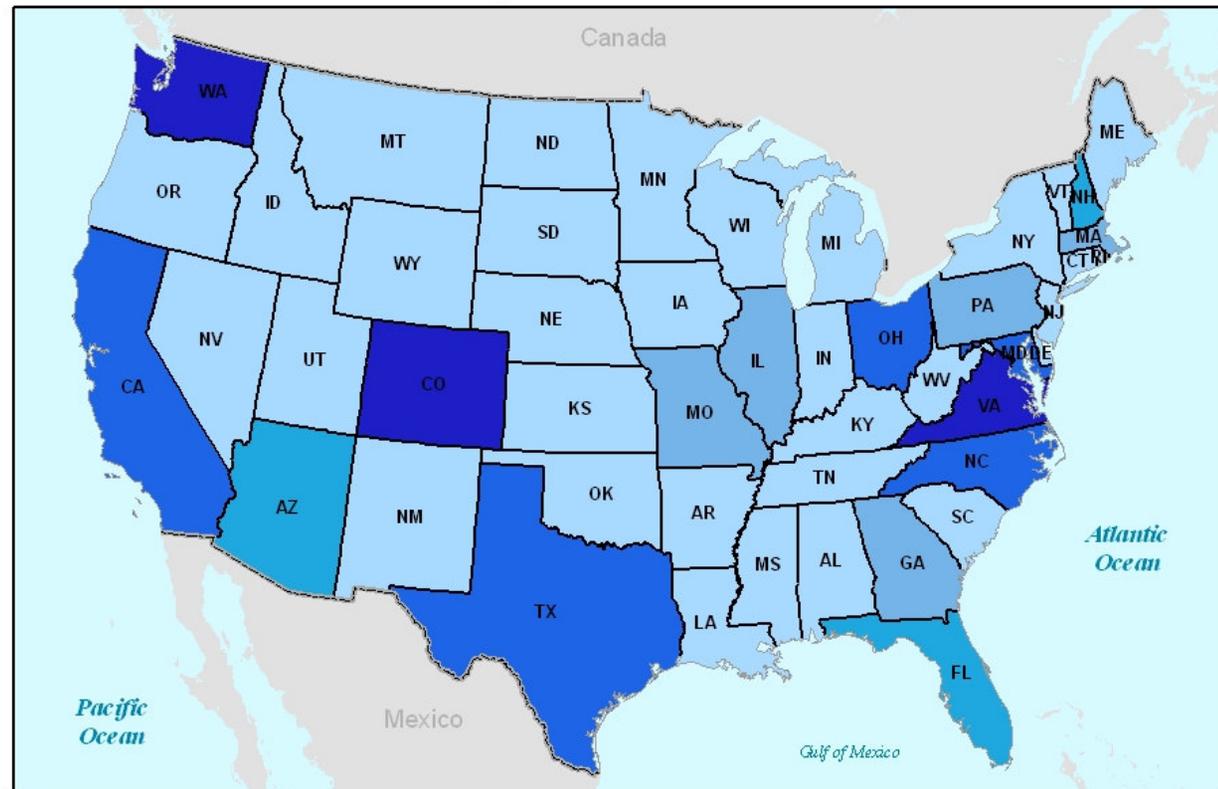
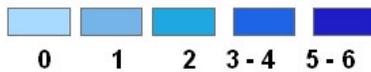
Information from GeoSearch.com

GeoSearch is a recruiting firm based in Colorado

Job Posting Counts by State

As Listed on www.GEOSEARCH.com on 4/1/09

45 Total Postings



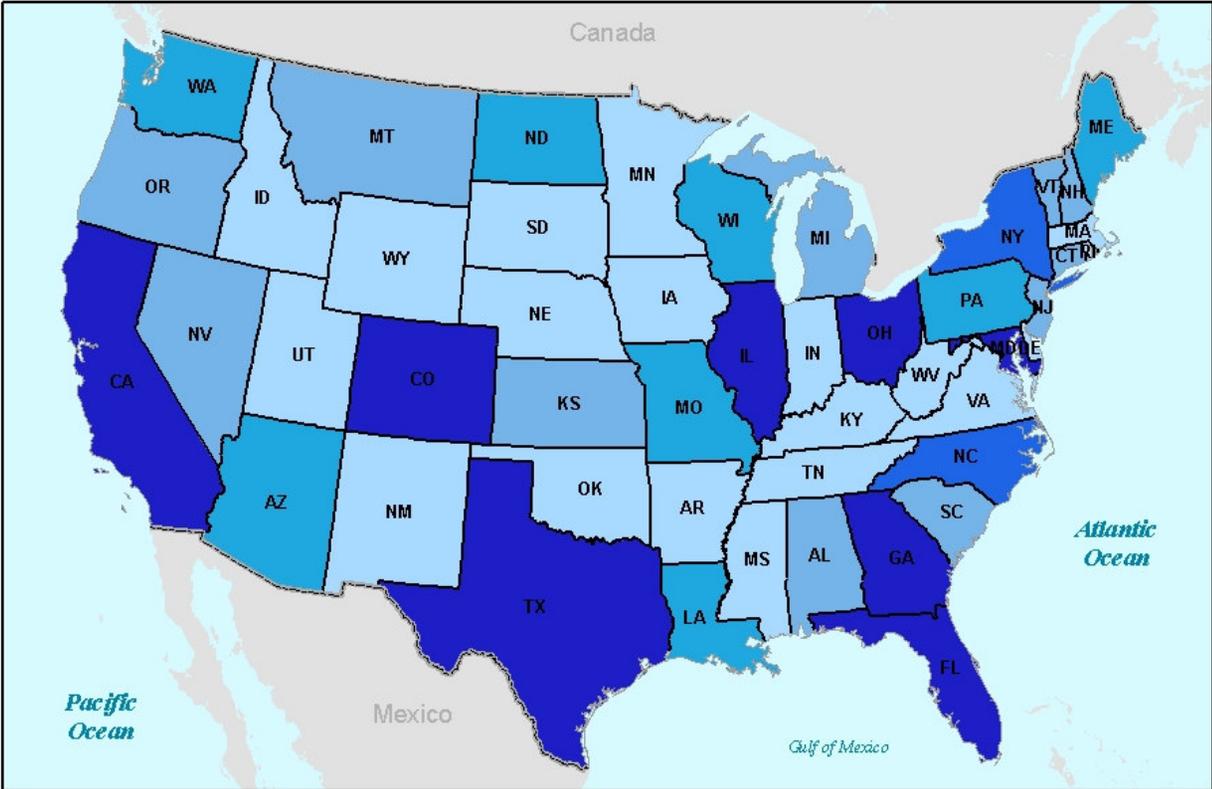
Last Year's Information from GeoSearch.com

Past Opportunities with GeoSearch

Job Posting Counts by State

As Listed on www.GEOSEARCH.com 2/29/08 to 4/25/08

152 Total Postings



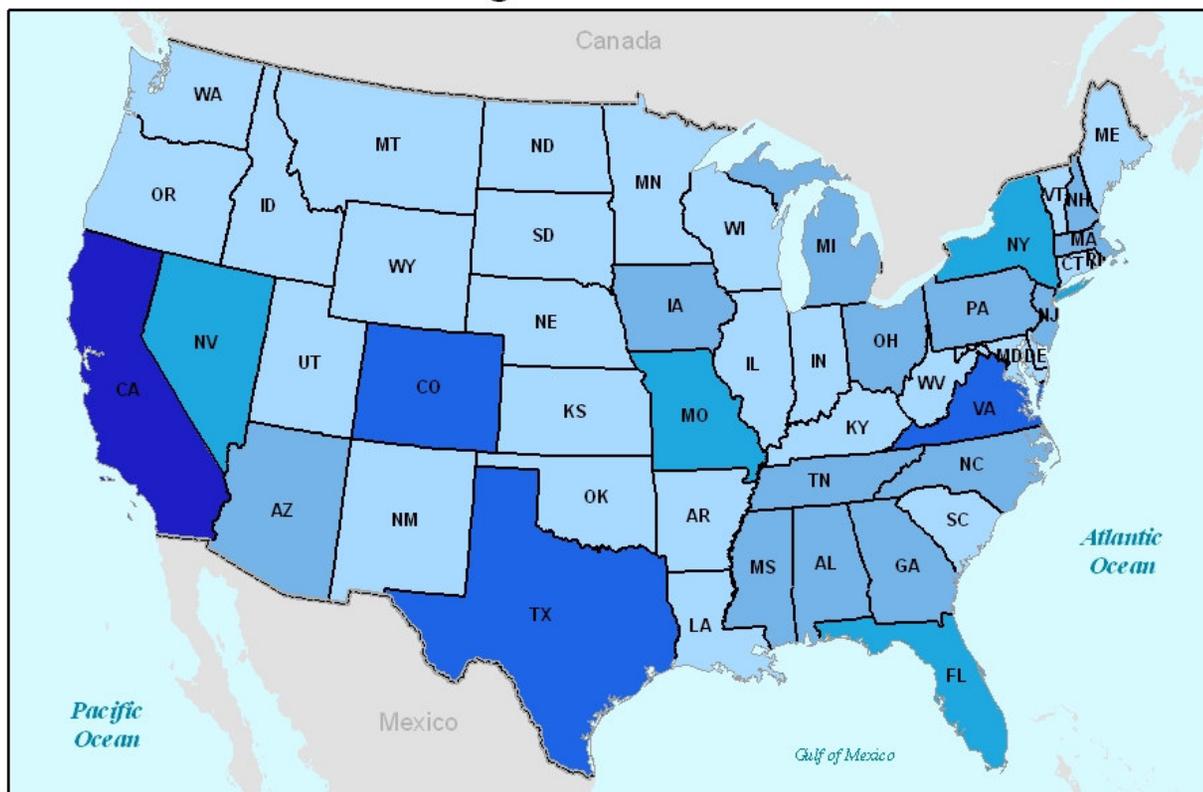
Information from GIScareers.com

Not a recruiter, the site has GIS job advertisements

Job Posting Counts by State

As Listed on www.GISCAREERS.com on 4/1/09

63 Total Postings



Information from GJC.org

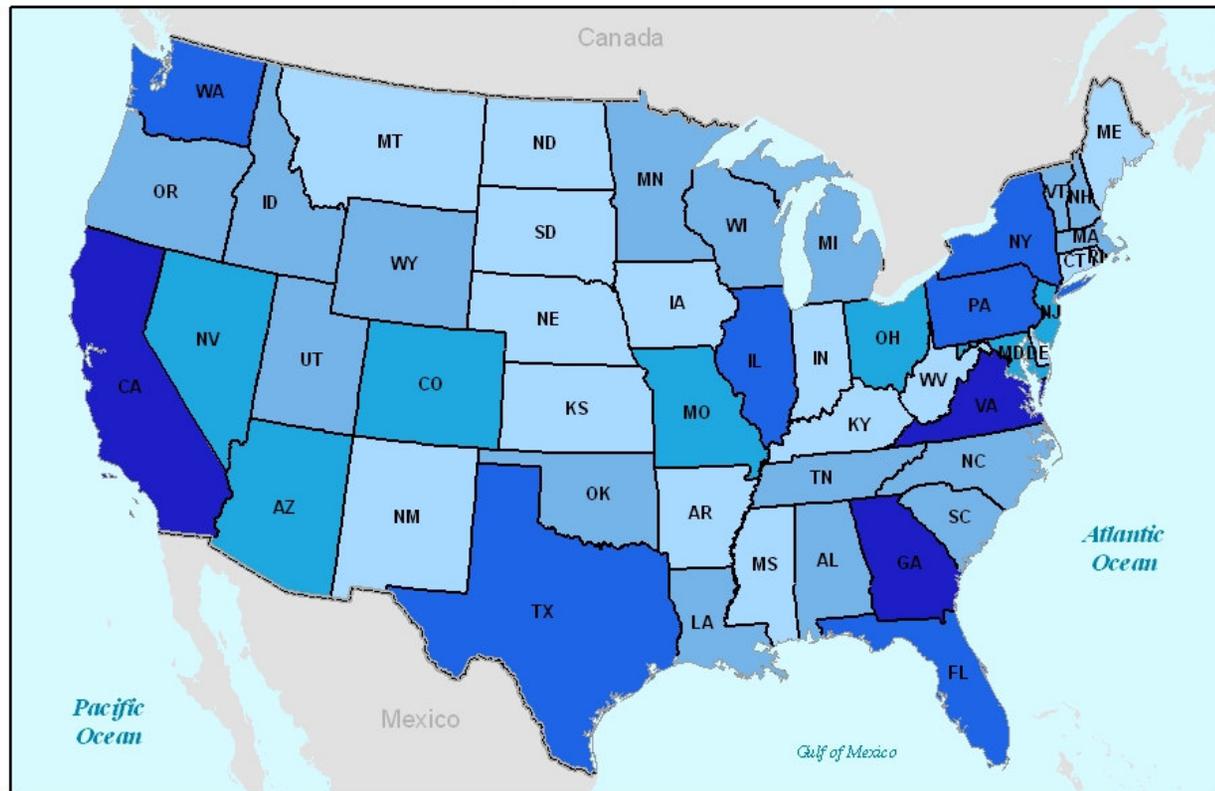
Probably the most popular GIS jobs site

Based in Minnesota

Job Posting Counts by State

As Listed on www.GJC.org 2/1/09 to 4/1/09

148 Total Postings



What to Consider for your Career?

Interests

- Bolles uses many descriptions for interests
- Think of them as your “favorite knowledges”
or
- As your “fields of fascination”
- How do you tell where your interests are?
- You are more than likely engaged in a true interest when you realize that you have...
“lost all track of time”

Why am I interested in GIS?

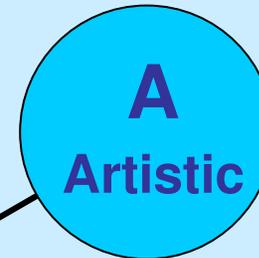
- I have always been fascinated with maps and globes, especially old ones...
- I am a visual learner and prefer to communicate visually with graphics!
- Geography/GIS is universally applicable, so it does appeal to the generalist in me...
- I tend to grow bored with job “tasks” quickly, and GIS provides variety in work!

What to Consider for your Career?

People-Environment

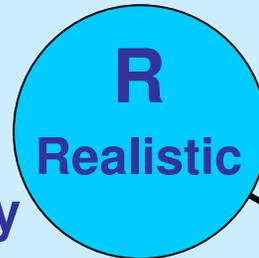
What kinds of people do you prefer to work with?

Investigative:
Curious & Analytical

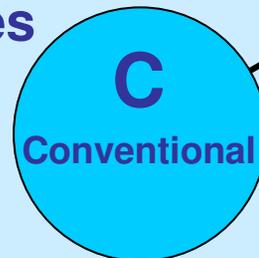


Artistic:
Imaginative &
Innovative

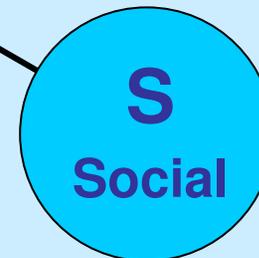
Realistic: likes
nature, athletics,
tools & machinery



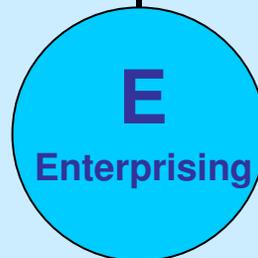
Conventional: likes
detailed work &
completing tasks



Social: Helper,
Teacher &
Serves Others



Enterprising: Self-Starter,
Influential & Persuasive



Everyone prefers three
people-environments...

What to Consider for your Career?

Values and Goals

- **Values** are what guide you through your daily activities, they inform you of how you complete a task or interact with a coworker
- If you value trying out new GIS software to assist in your work, would it be difficult to work for a “status-quo” boss?
- **Goals** are what you hope to accomplish during your lifetime; they provide direction
- Wouldn't it be great to work in a place that supported your goal of helping disadvantaged kids learn geospatial technologies, by allowing you flex-time one day a week?
- People stay where their values and goals are met, and tend to leave if they are overlooked!

What to Consider for your Career?

Favorite Working Conditions

- Preferences often discovered as an opposite to a objectionable condition at a prior job... 
- “Too much supervision” becomes you wanting “a modest amount of supervision”
- Punching in precisely at 7:00 a.m. and out at exactly 4:00 p.m. becomes “flexible hours” 
- Also consider what conditions you were working under when you were very effective...

What to Consider for your Career?

Responsibility Level

- Which title would fit the most comfortably?
- CEO/Owner, GIS Manager, GIS Team Leader, GIS Team Member (working with equals), Partnered (with one other employee), or a Solitary GPS Data Collector?
- Self-Employed / Consultant / Contractor (short or long term)
- The “Peter Principle” is worth considering as well, it is the theory that an employee will rise to their level of “incompetence” – however, incompetence might just be needing skills you don’t have to thrive in the promotion... true if you no longer use the skills that earned you the promotion in the first place...

What to Consider for your Career?

Job Growth and Salaries

Department of Labor Geospatial Jobs Outlook

Geospatial-Related Occupation	2000-2010 Growth	Median Annual Earnings
Cartographers and Photogrammetrists	18.5%	\$39,410
Surveyors	08.1%	\$36,700
Surveying and Mapping Technicians	25.3%	\$28,030
Architectural and Civil Drafters	20.8%	\$35,220
Civil Engineering Technicians	11.9%	\$35,990
Mechanical Drafters	15.4%	\$37,840
Electrical Drafters	23.3%	\$38,210
Electrical and Electronic Engineers	10.8%	\$40,020
Mechanical Engineering Technicians	13.9%	\$39,520
Industrial Engineering Technicians	10.1%	\$40,910
Environmental Engineering Technicians	29.1%	\$34,000
Geoscientists	18.1%	\$56,230

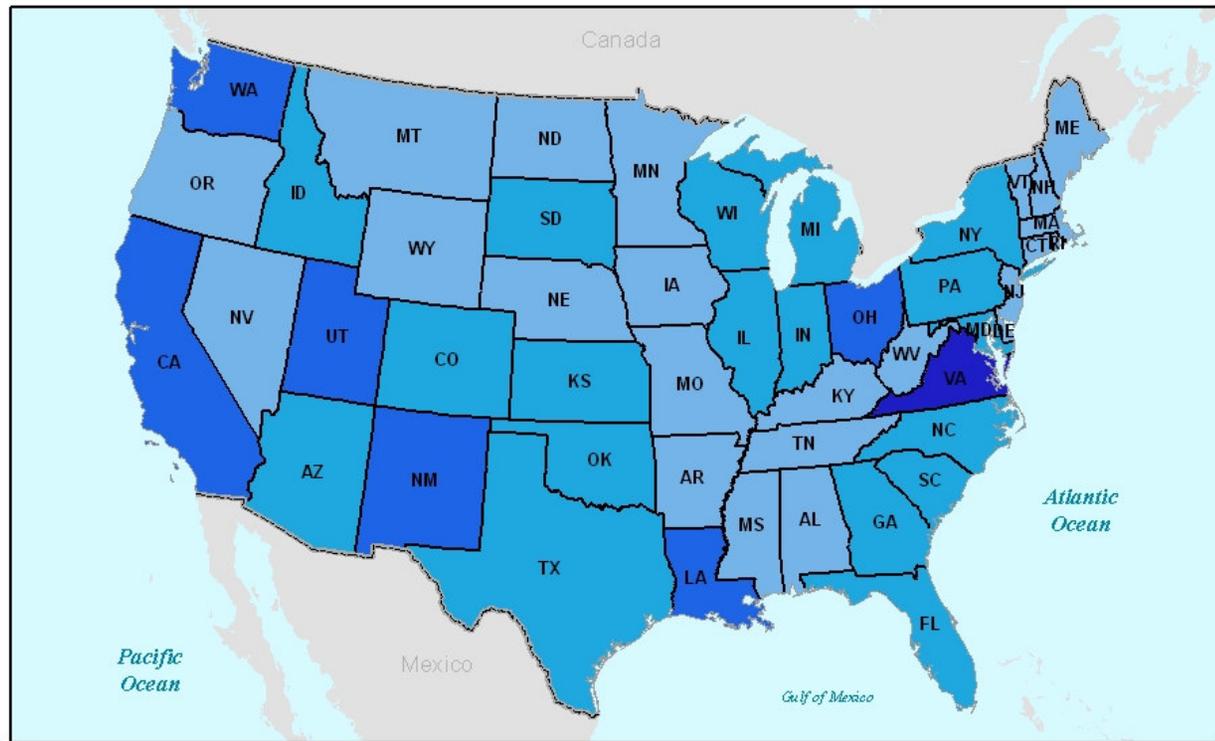
Source: Department of Labor Geospatial Industry Profile

What to Consider for your Career? Salaries and Location - 2009

Average Federal GIS Salaries by State

As derived from www.USAJOBS.com on 4/1/09 (sample of 258 postings)

Legend: No Salary Info, \$26,072 - \$29,999, \$30,000 - \$39,999, \$40,000 - \$49,999, \$50,000 - \$64,630

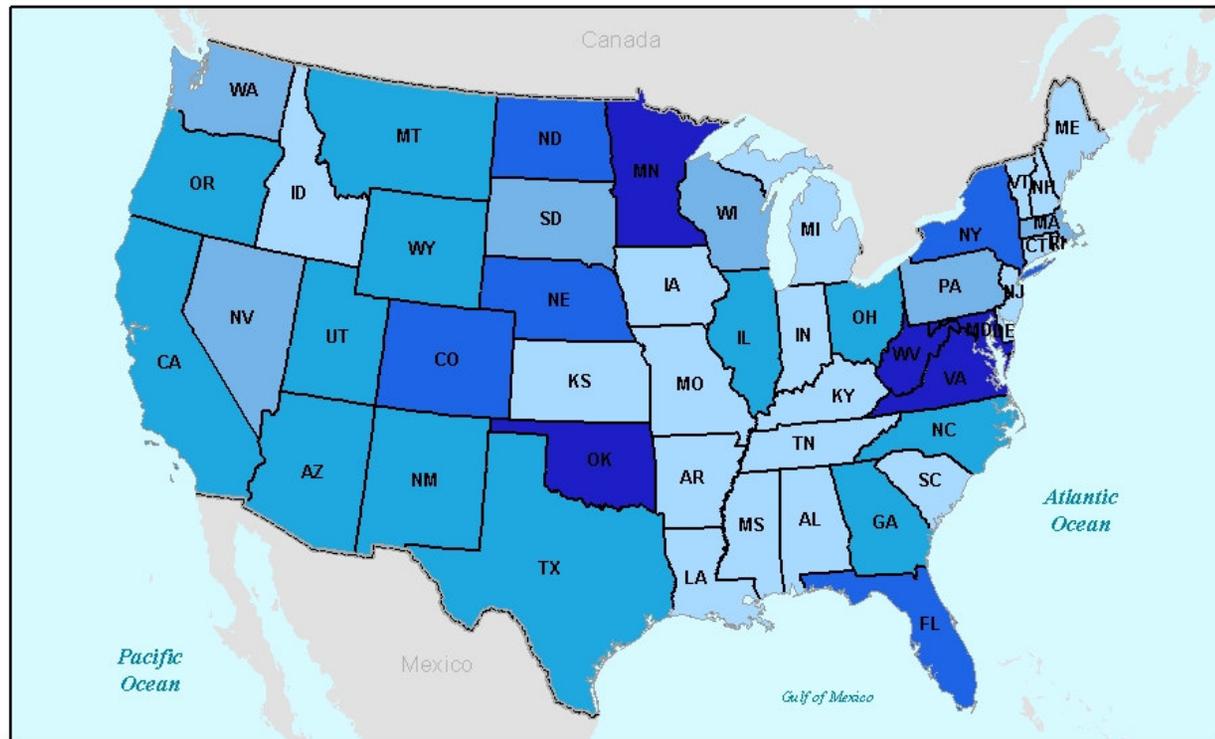


What to Consider for your Career? Salaries and Location - 2008

Average Federal GIS Salaries by State

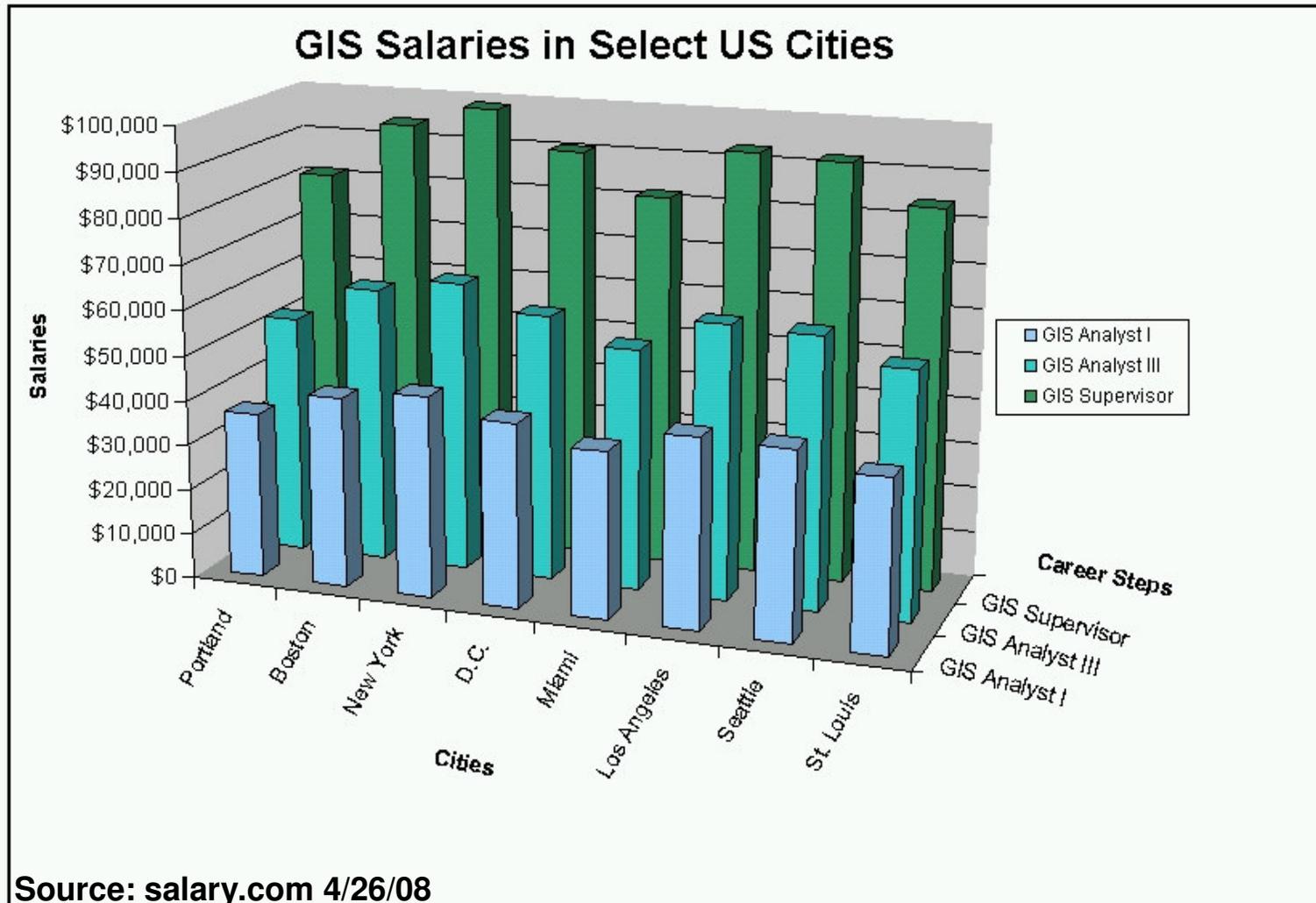
As derived from www.USAJOBS.com on 4/26/08 (sample of 101 postings)

Legend:
No Salary Info \$26,566 - \$36,740 \$36,741 - \$49,255 \$49,256 - \$62,291 \$62,291 - \$95,390



What to Consider for your Career?

Salaries and Compensation



What to Consider for your Career?

Salaries and Compensation

- Average federal salary of the postings shown on the map was **\$33,537** (it was \$48,009 last year)
- Average entry level (GIS Analyst I) salary for the eight cities on salary.com was **\$40,290**
- Average mid-career (GIS Analyst III) salary for the eight cities on salary.com was **\$58,300**
- Average experienced (GIS Supervisor) salary for these same cities on salary.com came to **\$89,693**
- Compared to Maine's Median Household Income (Three-Year-Average: 2002-2004) of **\$45,503***

* Source: www.census.gov/hhes/www/income/income06/statemhi.html

Why is Networking Important?

- A year 2000 survey of 3,000 internet-using job hunters found that only 4% had landed their most recent position via the internet!
- The so-called “Hidden Job Market” – the idea that 70% to 85% of openings are never advertised, but are filled by word of mouth and personal recommendations...
- Managers would rather hire based on a known reference, rather than risk hiring an unknown – who may make the company (i.e. manager) look bad at some future date.

GIS Networking Opportunities

- Local Opportunities:



- Regional Opportunities:



- International Opportunities:

Twenty-Ninth Annual ESRI International User Conference '09

- Online Opportunities:



A Cautionary Tale...

Beware of the blurring boundaries between public and private information...

- Who here is familiar with sites like variants of myspace.com, facebook.com, flickr.com, - basically online photo albums and diaries?
- Companies and agencies who web-profile job seekers on sites like these are increasing...
- For risk adverse managers this is a way to gather intelligence to eliminate potential prospects...
- Consider building a professional profile on LinkedIn
- Many webpages are archived, so be careful of posting to the internet's "infinite" memory!

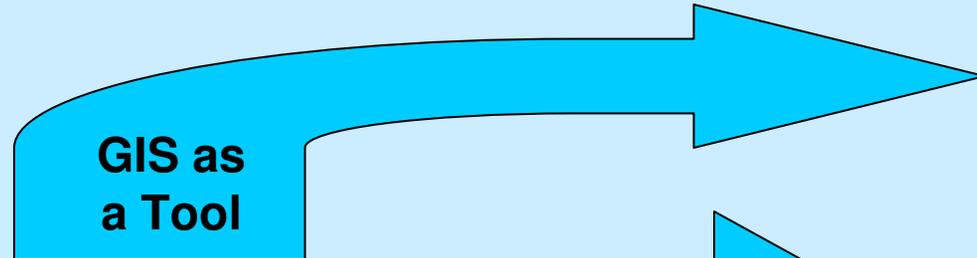
As these informal sites look to become a formal source of information...

Routes and Paths to Working in GIS

“Growing” Pathway

Expansion of GIS tools with increasing ease of use, allows non-GIS specialists to apply GIS to much of their work “out of the box”

Use GIS in Conjunction with another Specialization
MBA, Crime Analyst, Medical Staff, PI, Real Estate...
Arguably, programming skills are of less value here?



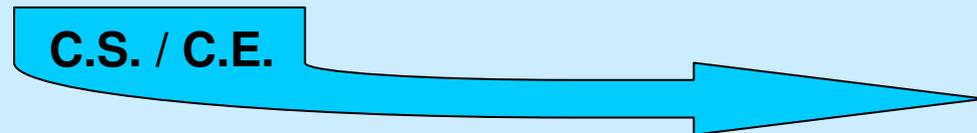
The Major Route of the Past “GIS Specialist”

Education in Geography / Geo-Natural Sciences / Planning
(Increasingly wise to learn programming apps on this route)

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“Minor” Pathway

Likely stagnant to stable job growth – very dependant on outsourcing, globalization, etc.
Declining numbers of CS grads in the US – factors still in flux



Computer Science – Orono Type Program
Lotta code with a little spatial stuff – GIS tends to be seen theoretically not as something applied to...

What was GIS like at UMF in '93?

- A single license of command-line ARCInfo Version 6 running on a Sparc WorkStation
- PC ArcInfo & ArcView2 running on four 386 PCs with their very own digitizing tablets
and...
- Unlimited use of all the data we could create ourselves!
- So, how much has GIS changed today?

Future Trends: Skills Balance

- Past GIS skillsets looked similar to this...



- Future skillsets need to be better balanced

Satellite / Aerial Photo Interpret
Python Google XML Open Source
Web Design IMS SDE Programming
Cartography ESRI .asp Data Base Management

Looks like the specialist is becoming a generalist...

Future Trends: Programming

- For the GIS Specialist, “light” programming skills will be of greater importance...
- Not heavy duty programming skills like C, C+, C#, VB that require hours of coding, debugging, compiling, bleary red-eyes...
- Scripting languages like Python, or web-enabling languages like XML, HTML, Cold Fusion will be required to fix a broken “button” or to automate a process...

Future Trends: Rasters

- Costs of raster datasets (aerial or satellite imagery) are decreasing at the same time that public exposure via “GoogleEarth / GoogleMaps, Virtual Earth” is increasing...
- This “perfect storm” is likely to ensure that interpreting and manipulating these types of data plays an increasingly important in your required GIS knowledge base..

Future Trends: Intelligence

- BI, CI, GI and LI – care to take a guess?
- A rule of thumb is that about 70 to 75% of business data is either spatial in nature or has a spatial aspect, like an address...
- Governments and businesses alike are tapping into their BI to conduct CI or GI and companies are going to be selling us consumers more LI-enabled products...



Future Trends: Professional Certification



- Not the same as earning a GIS Certificate
- Conceptually similar to a state-recognized “Professional Engineer” or a (state) “Licensed Surveyor” (without the tests)
- Portfolio Based: Standardized testing is problematic because of the breadth of GIS
- Endorsed by North Carolina and Oregon
- 4,439 certified GISPs as of 3/25/09 (2,125 certified GISPs as of 3/25/08)

Summary: General

- **Remember to carefully consider each of these items:**
 - 1) Skills
 - 2) Geography
 - 3) Interests
 - 4) People Environments
 - 5) Values, Purposes, and Goals
 - 6) Working Conditions
 - 7) Salary & Level of Responsibility
- **While considering these things, never underestimate the power of specific, clearly articulated, written goals – they will provide your career and life with direction, a priceless commodity with all the rapid changes that continue to unfold before our eyes...**

Summary: GIS

- Like many aspects of modern life, the realm of geospatial technology is changing rapidly
- This means that the past will often tend to not be a good indicator of the future
- GIS-related careers will require a broader array of skills along with a more active management approach to stay on top of the latest changes...
- Fortunately there are many resources out there that will allow the professional to do just that
- Democratization of GIS technology will allow the casual user to do more with GIS, but there will be a place for specialists – they will just increasingly look more and more like generalists

Additional Resources:

Good GIS Career Sites:

- ESRI - www.gis.com/careers/
- Directions - www.directionsmag.com/careers/
- DOL - www.doleta.gov/BRG/Indprof/Geospatial.cfm

Additional Resources:

Good General Career Sites:

- 48 Days - www.48days.com/
- Richard Bolles - www.jobhuntersbible.com/
- True Colors - www.truecolorscareer.com/
- Dr. Randall Hansen - www.careerdoctor.org/

Additional Resources: Professional Development Info

- **Traditional Print Media** – GeoSpatial Solutions, ArcUser, GPS World, ArcNews



Earth Observation Magazine

- **Blogs: Planet Geospatial slashgeo**



- **E-Newsletters: GeoCommunity GISmonitor**



Directions Magazine



Location Intelligence

- **Print or E-Magazines : GeoIntelligence**

Additional Resources: Further Education

- **Undergraduate Programs in GIS (BA &AA)**
BA/BS common in Europe - AA/AS Common in the US

- **“Traditional” Graduate GIS Certificates**



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A POLYTECHNIC INSTITUTION



UNIVERSITY OF
NORTH DAKOTA



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MALASPINA
www.mala.ca



- **And at least one GIS PhD Program**



University of Texas at Dallas

There are a lot more choices today than when I went less about ten years ago!

Questions?

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Thank You!