BIG DATA AND SMALL COMMUNITIES: OPPORTUNITIES AND CHALLENGES

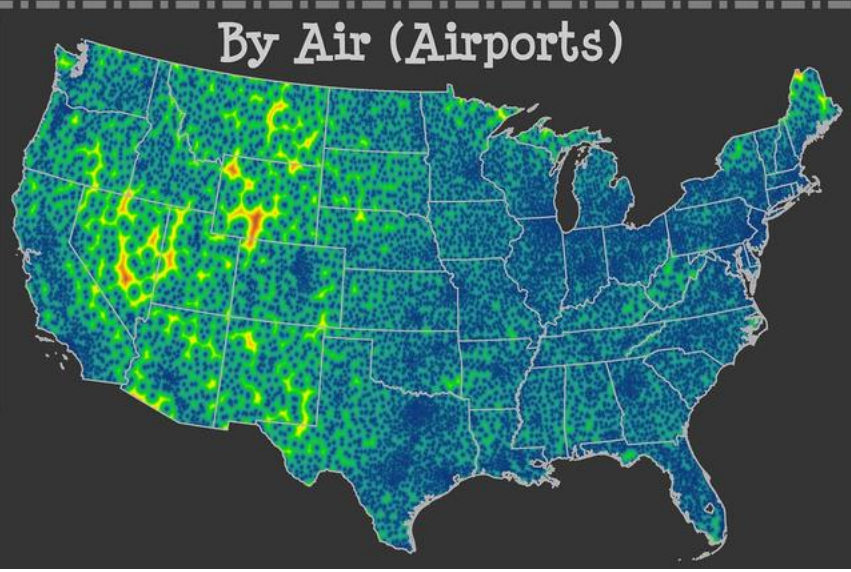
Jaap Vos, Ph.D.
Professor and Head
Bioregional Planning and Community Design
University of Idaho
jvos@uidaho.edu

University of Idaho
College of Art and Architecture

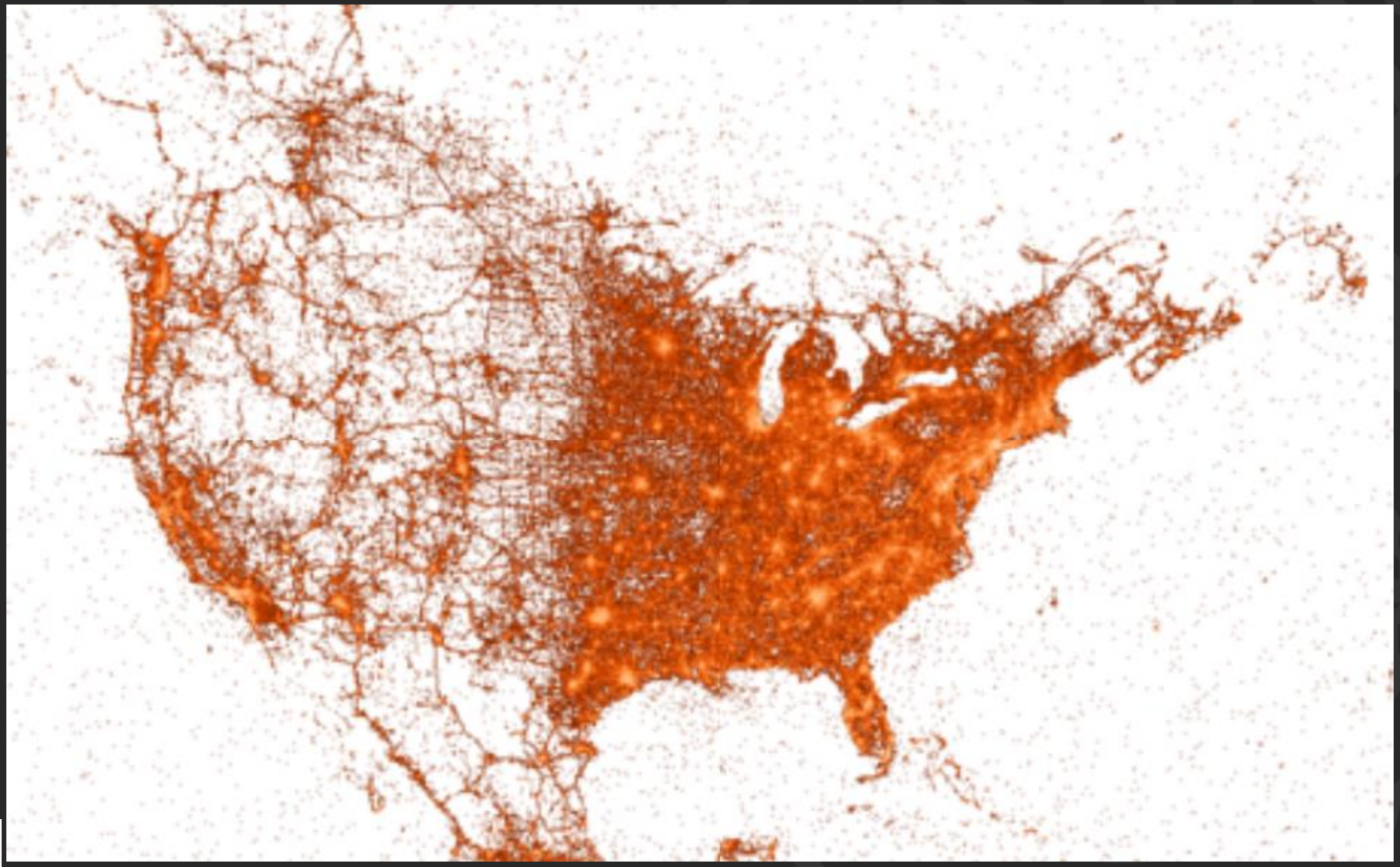
The Middle of Nowhere

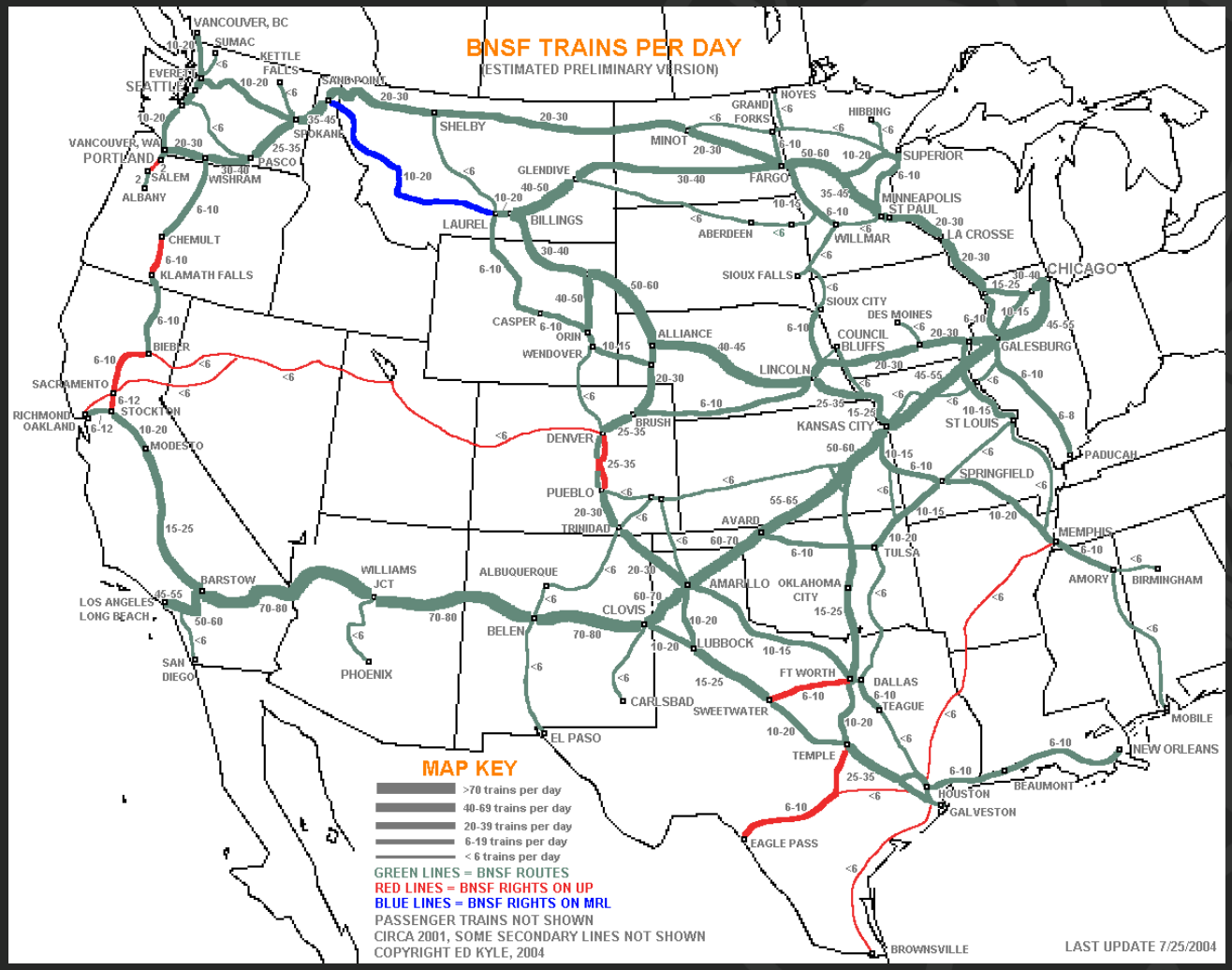
Somewhere — Nowhere

Location

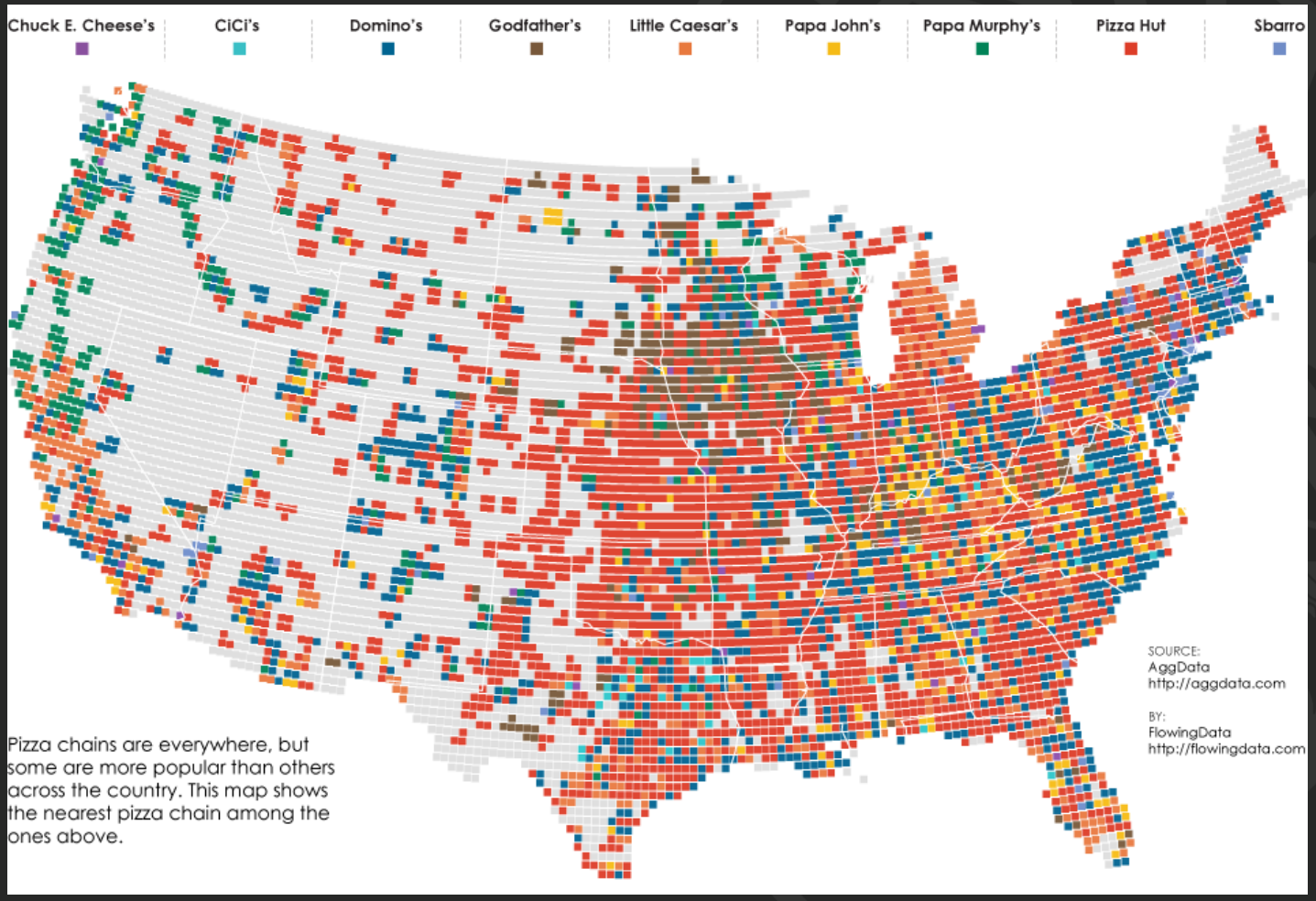


University of Idaho
College of Art and Architecture





University of Idaho
College of Art and Architecture



University of Idaho
College of Art and Architecture

BEING IN A PLACE WITH LIMITED PLANNING CAPACITY AND A DIFFERENT GEOGRAPHY

There is very limited data and the data that we have is either inadequate or misleading.

A CAUTIONARY TALE ABOUT DATA AND SMALL COMMUNITIES

Jaap Vos, Ph.D.
Professor and Head
Bioregional Planning and Community Design
University of Idaho
jvos@uidaho.edu

University of Idaho
College of Art and Architecture

BOISE IS RANKED AMONG THE BEST CITIES IN THE US.

Livability data

University of Idaho
College of Art and Architecture

Rank	City	Livability	Ame-nities	Cost of Living	Crime	Education	Emp-loyment	Housing	Weather
1	Irvine, CA Population: 213,880	86	A+	F	A+	A	A	A+	A
2	Honolulu, HI Population: 341,727	85	A+	F	A+	B+	B	A+	A
3	Gilbert, AZ Population: 208,850	84	A+	C	A	A	B+	B+	A
4	Arlington, VA Population: 209,077	84	A+	F	A	A	A	A+	B
5	Plano, TX Population: 263,122	84	A+	D+	B+	A	B+	B	A
6	Scottsdale, AZ Population: 219,867	84	A+	D	B	A	B	A	A
7	Fremont, CA Population: 215,188	83	A+	F	B+	B+	A	A+	B+
8	Chandler, AZ Population: 237,456	82	A+	C	B	A	B	B+	A
9	Henderson, NV Population: 258,270	82	A+	D	B+	A	B	B+	A
10	Virginia Beach, VA Population: 439,528	82	A+	D	B	A	B	B+	B+
11	Mesa, AZ	81	A+	A	C	B	C+	B	A
12	Boise, ID Population: 208,332	81	A+	A	C+	A	C+	B	C
13	Tampa, FL Population: 339,391	81	A+	B+	D+	B	C	B	A+
14	Lexington-Fayette, KY Population: 296,766	81	A+	A	C	B+	C+	B	C+
15	Columbus, OH Population: 790,168	80	A+	A+	C+	B+	C	C+	C
16	San Jose, CA Population: 954,379	80	A+	F	C	B	B+	A+	A
17	Raleigh, NC Population: 405,007	80	A+	C	C	A	C+	B	B+
18	St. Petersburg, FL Population: 245,363	80	A+	A	F	B	C	C+	A+

University of Idaho
College of Art and Architecture

University of Idaho
College of Art and Architecture

Climate

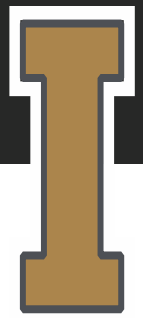
Download .xls

CLIMATE OVERVIEW

Boise City, Idaho, gets 12 inches of rain per year. The US average is 37. Snowfall is 20 inches. The average US city gets 25 inches of snow per year. The number of days with any measurable precipitation is 88.

On average, there are 206 sunny days per year in Boise City, Idaho. The July high is around 90 degrees. The January low is 22. Our comfort index, which is based on humidity during the hot months, is a 68 out of 100, where higher is more comfortable. The US average on the comfort index is 44.

CLIMATE	Boise City, Idaho	United States
Rainfall (in.)	11.7	36.5
Snowfall (in.)	19.8	25
Precipitation Days	88	100
Sunny Days	206	205
Avg. July High	90	86.5
Avg. Jan. Low	22.1	20.5
Comfort Index (higher=better)	68	44
UV Index	4.1	4.3
Elevation ft.	2,715	1,443



University of Idaho
College of Art and Architecture

BOISE HAS BOTH A LOW EDUCATIONAL ATTAINMENT AND LOW INCOME LEVELS.

New York Times Map

MANHATTAN INSTITUTE IDENTIFIED IDAHO AS MAIN GROWTH CORRIDOR.

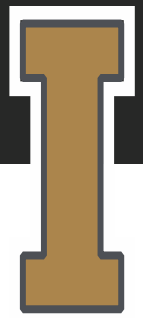
The four growth corridors are:

1. The Great Plains region, made up of Montana, Wyoming, Colorado, New Mexico, Texas, Oklahoma, Kansas, Nebraska, and the Dakotas

2. The "Third Coast" stretch of counties whose shores abut the Gulf of Mexico and which range through Texas, Louisiana, Mississippi, and Florida

3. The "Intermountain West," consisting of counties in the north of New Mexico and Arizona, parts of eastern California and western regions of Montana, Wyoming, and Colorado, as well as the non-coastal eastern regions of Oregon and Washington and all of Idaho, Utah, and Nevada

4. The "Southeast Manufacturing Belt" of counties in eastern Arkansas, all of Tennessee, and large swaths of Kentucky, the Carolinas, Georgia, Alabama, Mississippi, and southwestern Virginia



University of Idaho
College of Art and Architecture

SOME IDAHO FACTS:

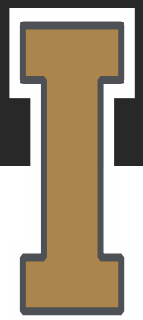
	2000	2010	Change	
Population	1,293,953	1,567,582	21%	273,629
Median age	33.2	34.6		
White (%)	91.0	89.1	16%	

Metropolitan statistical area	Population		Change	
	2000	2010	Number	Percent
MOST POPULOUS				
New York-Northern New Jersey-Long Island, NY-NJ-PA	18,323,002	18,897,109	574,107	3.1
Los Angeles-Long Beach-Santa Ana, CA	12,365,627	12,828,837	463,210	3.7
Chicago-Joliet-Naperville, IL-IN-WI	9,098,316	9,461,105	362,789	4.0
Dallas-Fort Worth-Arlington, TX	5,161,544	6,371,773	1,210,229	23.4
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	5,687,147	5,965,343	278,196	4.9
Houston-Sugar Land-Baytown, TX	4,715,407	5,946,800	1,231,393	26.1
Washington-Arlington-Alexandria, DC-VA-MD-WV	4,796,183	5,582,170	785,987	16.4
Miami-Fort Lauderdale-Pompano Beach, FL	5,007,564	5,564,635	557,071	11.1
Atlanta-Sandy Springs-Marietta, GA	4,247,981	5,268,860	1,020,879	24.0

University of Idaho
College of Art and Architecture

IDAHO'S 5 FASTEST GROWING CITIES (%):

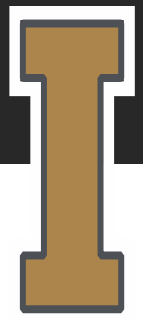
1. Marsing, 27.1 %
2. Franklin, 11.7 %
3. Meridian, 7.1 %
4. Star, 6.9 %
5. Stanley, 6.5 %



University of Idaho
College of Art and Architecture

MARSING IS THE FASTEST GROWING CITY IN IDAHO.

	2010 Census	2010 Estimate	2011 Estimate	2012 Estimate	Net Change	Growth
Marsing	1,031	1,313	1,310	1,311	280	27.16%



University of Idaho
College of Art and Architecture

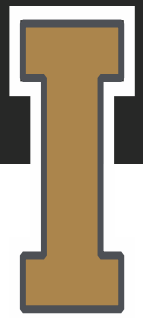
MERIDIAN IS ONE OF THE FASTEST GROWING CITIES IN THE US:

Table 1. The 15 Fastest-Growing Large Cities with Populations of 50,000 or more from July 1, 2012 to July 1, 2013

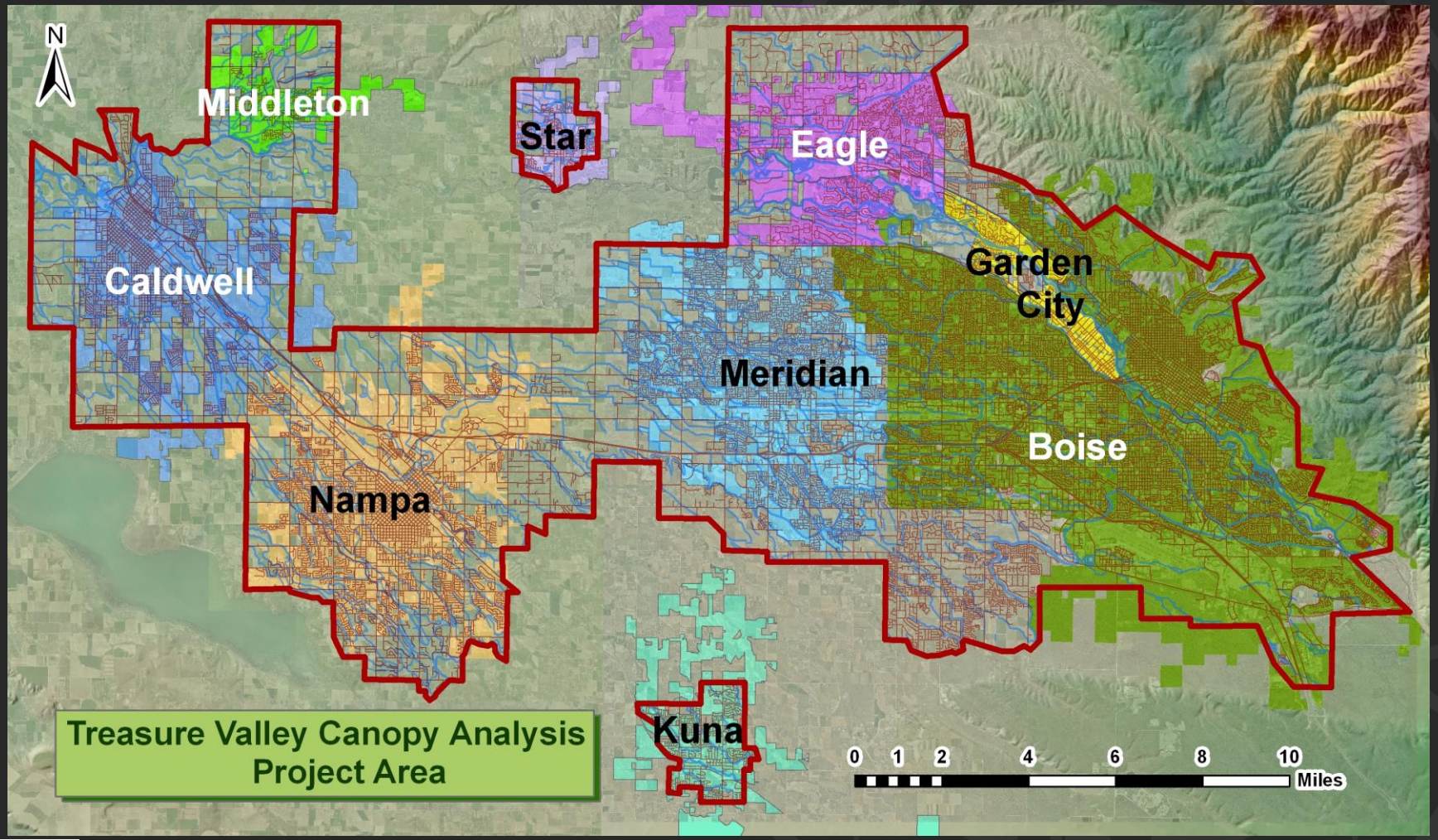
Rank	Area Name	State Name	Percent Increase	2013 Total Population
1	San Marcos city	Texas	8.0	54,076
2	Frisco city	Texas	6.5	136,791
3	South Jordan city	Utah	6.1	59,366
4	Cedar Park city	Texas	5.6	61,238
5	Lehi city	Utah	5.5	54,382
6	Goodyear city	Arizona	4.8	72,864
7	Georgetown city	Texas	4.5	54,898
8	Gaithersburg city	Maryland	4.4	65,690
9	Mount Pleasant town	South Carolina	4.1	74,885
10	Meridian city	Idaho	4.0	83,596
11	Odessa city	Texas	4.0	110,720
12	Gilbert town	Arizona	4.0	229,972
13	McKinney city	Texas	3.9	148,559
14	Franklin city	Tennessee	3.9	68,886
15	Pearland city	Texas	3.8	100,065

Source: U.S. Census Bureau, Population Division, Vintage 2013 Population Estimates

Release Date: May 2014



University of Idaho
College of Art and Architecture



University of Idaho
College of Art and Architecture

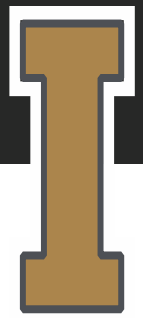
REALITY THAT GROWTH IS SPREAD PRETTY EQUAL:

	2010	2013	%	Absolute
Boise	206,345	214,237	4%	7892
Nampa	81,836	86,518	6%	4682
Meridian	75,602	83,596	11%	7994

THE BOISE MSA WILL HAVE 1 MILLION PEOPLE BY 2040.

THE PROJECTIONS FOR THE REGION SEEM SIGNIFICANTLY OFF:

	2010	2013	%	Absolute	2015	%
Boise	206,345	214,237	4%	7892	245,565	14.6 %
Nampa	81,836	86,518	6%	4682	97,580	12.7 %
Meridian	75,602	83,596	11%	7994	94,289	12.8 %
Total		384,351		53,083	437,434	

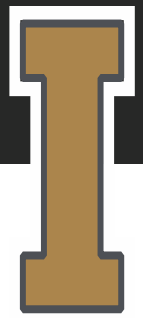


That means we would have to have about 723 people move to the Treasure Valley every day.

University of Idaho
College of Art and Architecture

ACCORDING TO THE DEPARTMENT OF COMMERCE'S GEM STATE PROSPECTOR :

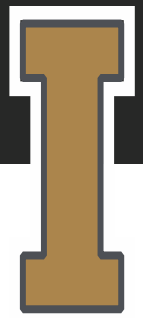
	2010	2014	%	Absolute
Boise	206,345	214,168	3.8%	7823
Nampa	81,836	84,780	3.6%	2944
Meridian	75,602	78,214	3.5%	2612



University of Idaho
College of Art and Architecture

DIFFERENCE BETWEEN TWO DATA SOURCES:

	2013 Census	2014 Gem State	Difference
Boise	214,237	214,168	69
Nampa	86,518	84,780	1,738
Meridian	83,596	78,214	5,382



University of Idaho
College of Art and Architecture

GEMSTATE PROSPECTOR

Add Properties

Business Attraction Group, Idaho Department of Commerce
For more information, please contact:
Patrick Watson
Phone: 208-287-3166
patrick.watson@commerce.idaho.gov

University of Idaho
College of Art and Architecture

SO WHAT IS GOING ON WITH THE LOCAL POPULATION?

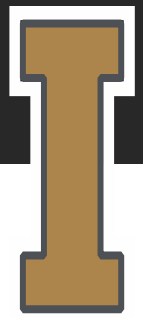
If it were only that easy.

CHANGES BETWEEN APRIL 1, 2010 AND JULY 1, 2013 (ACCORDING TO US CENSUS):

Boise MSA grew by 5.5 percent to a population of 650,288 (one of the fastest growing MSAs in the country).

SOME TYPICAL LOCAL FACTS:

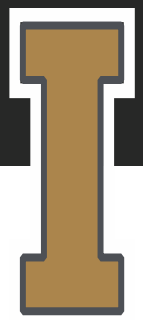
	Ada County		Canyon County	
	2000	2010	2000	2010
Population	300,904	392,365	131,441	188,923
Median age	32.8	34.8	30.5	31.6
White	92.9	90.3	85.5	85.7
Black	1.0	1.1	0.5	0.6
Hispanic	4.5	7.1	18.6	23.9
Mexican	3.0	5.4	14.9	21.0
Household size	2.6	2.6	2.9	2.9
Family size	3.1	3.1	3.3	3.4
Housing units	113,408	159,471	47,965	69,409
Seasonal housing	483	1,018	251	280



University of Idaho
College of Art and Architecture

BUT THERE ARE MORE INTERESTING DATA SOURCES

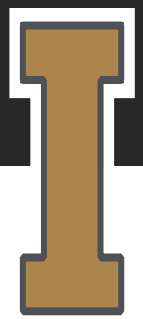
Driver's license information from Idaho Department of Transportation



University of Idaho
College of Art and Architecture

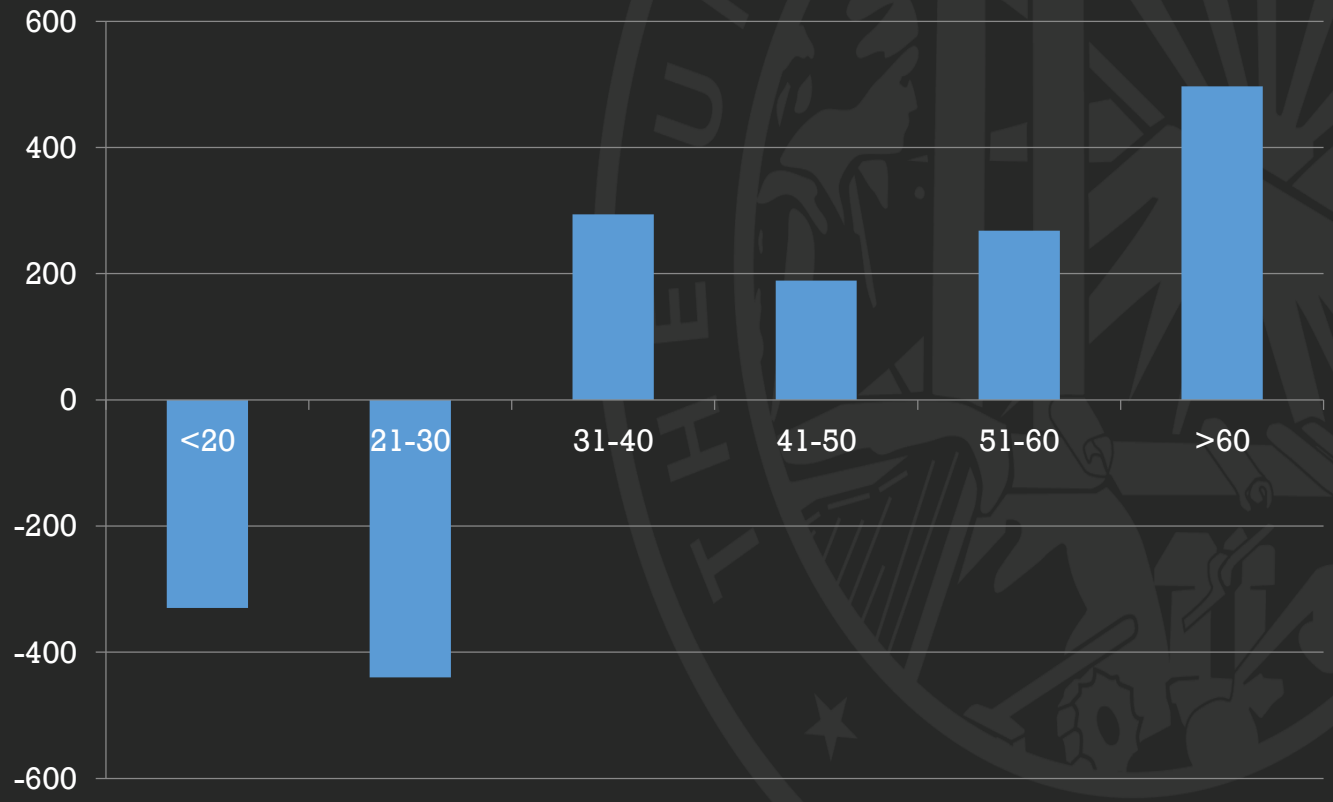
BETWEEN 2009 AND 2013, 478 PEOPLE MOVED FROM COLORADO TO IDAHO

This seems hardly relevant to planning.



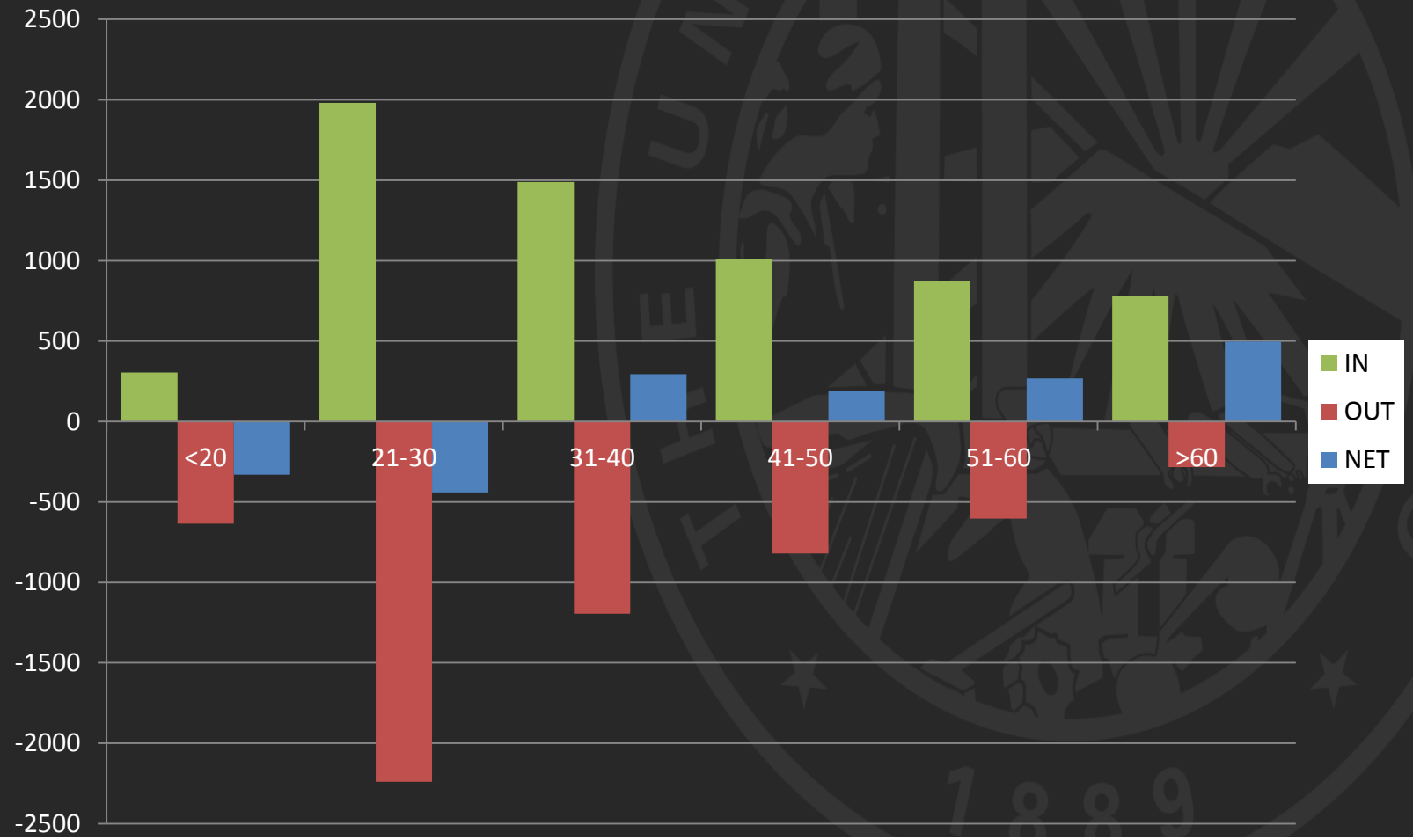
University of Idaho
College of Art and Architecture

GROWTH ONLY TELLS PART OF THE STORY



University of Idaho
College of Art and Architecture

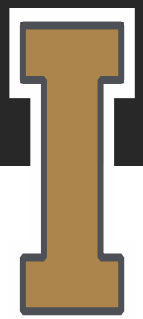
BUT 478 HIDES THE DYNAMICS:



University of Idaho
College of Art and Architecture

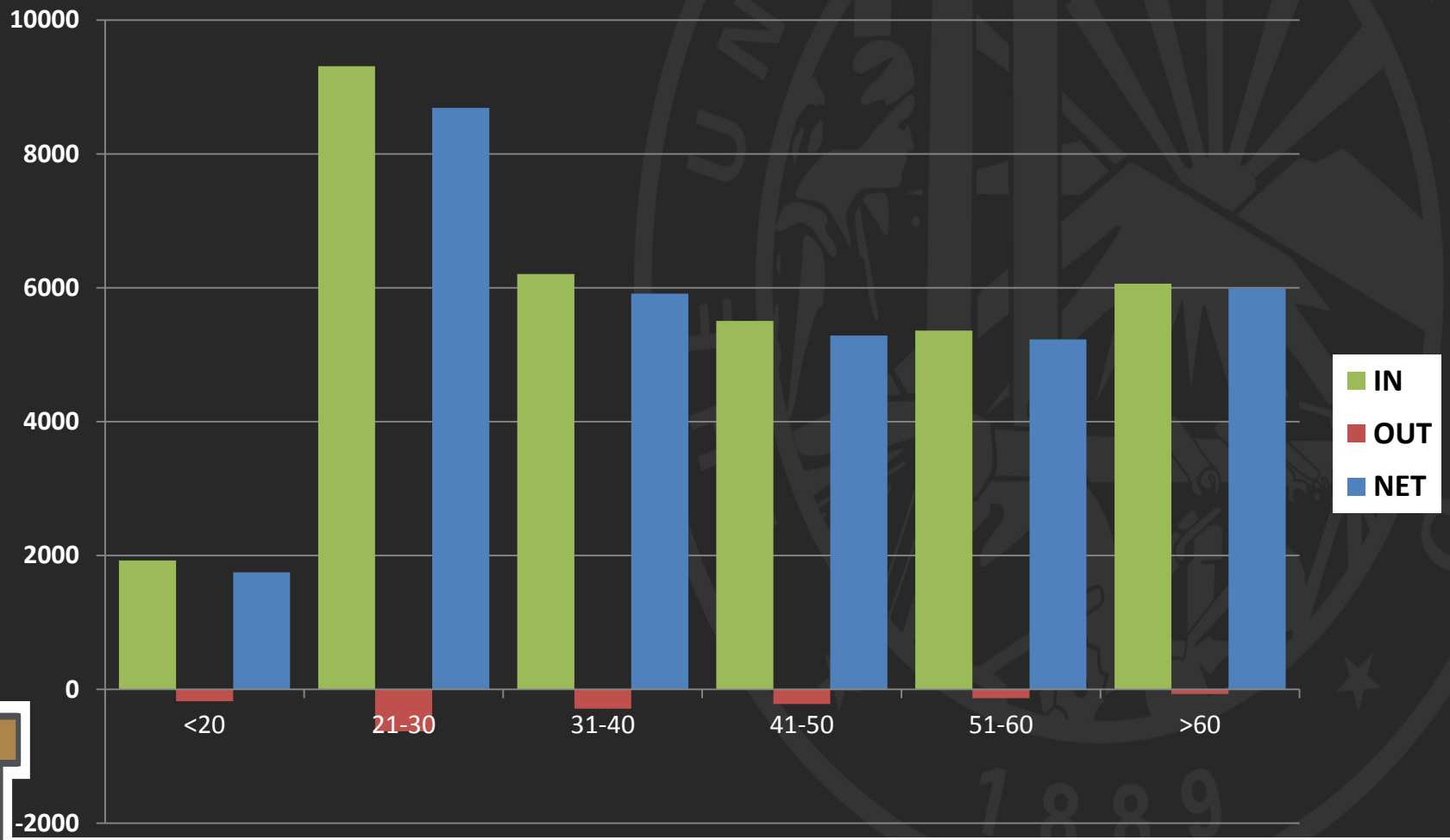
STATES WITH A BIG EXCHANGE:

- Arizona
- Colorado
- Montana
- Nevada
- Oregon
- Utah
- Washington



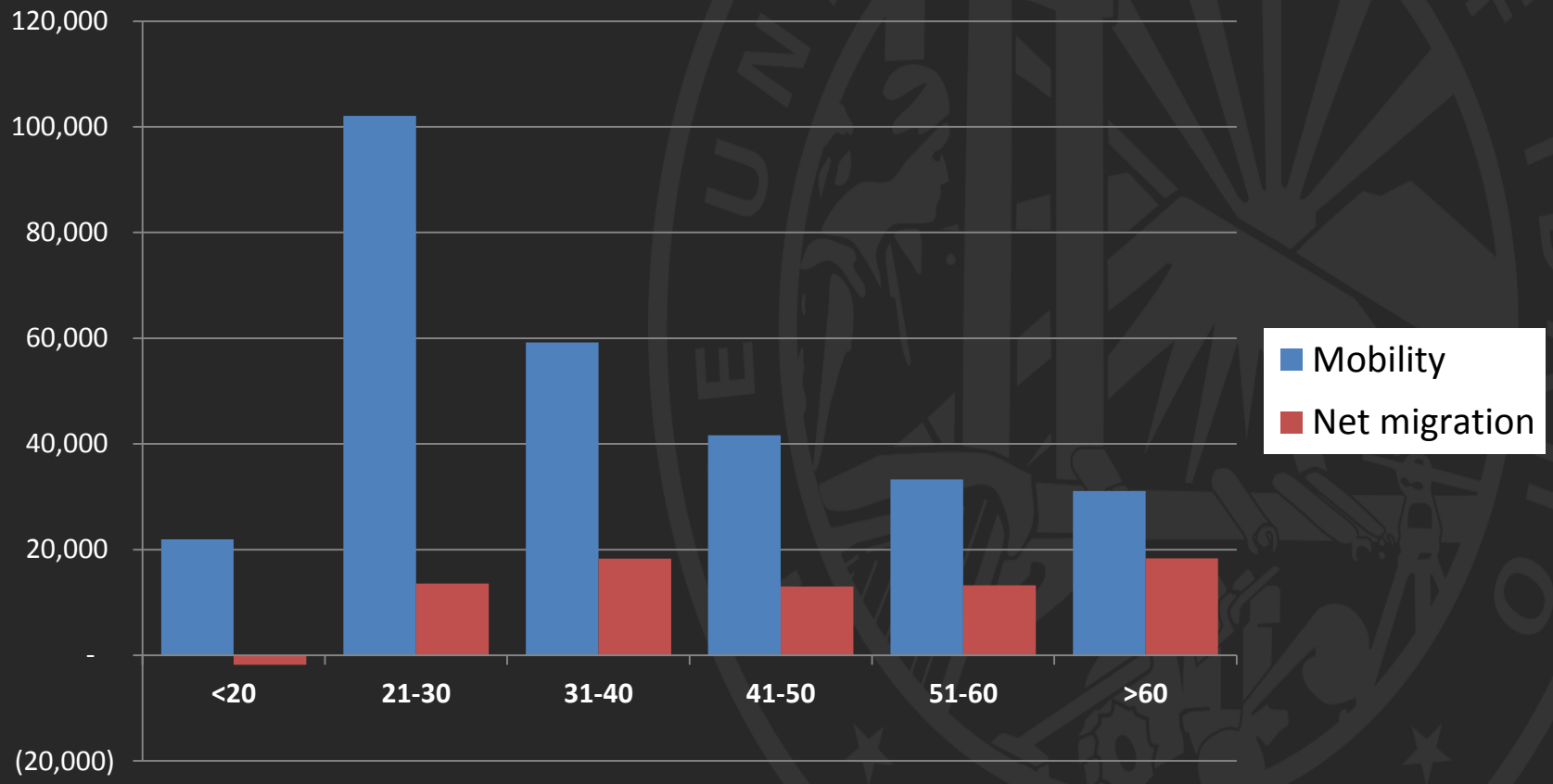
University of Idaho
College of Art and Architecture

CALIFORNIA IS A DIFFERENT STORY:



University of Idaho
College of Art and Architecture

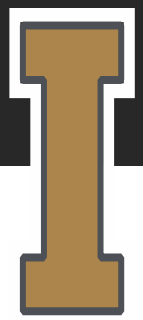
MOBILITY AND MIGRATION (2009-2013):



University of Idaho
College of Art and Architecture

NOW I KNOW A BIT MORE ABOUT THE CHANGES THAT ARE OCCURRING:

- Idaho "loses" young people (<30) to Alaska, Colorado, Florida, Montana, North Dakota, Oregon, Utah, Washington and Wyoming.
- With the exception of North Dakota, there is a positive influx of people 30 and older from every state.
- We know nothing about people that are leaving or entering.



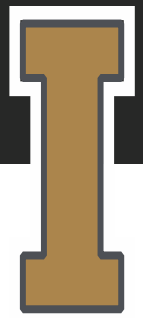
University of Idaho
College of Art and Architecture

CENSUS POPULATION ESTIMATES

We produce overall net rates of movement between counties for the total population estimates by three age groups: under 18, 18 to 64, and 65 and over. For the household population aged under 18 and 18 to 64, we use person-level data on filers, spouses, and dependents from IRS tax exemptions. We match two years of IRS tax returns with age data from the Social Security Numeric Identification File (NUMIDENT) to produce geographic data by age. We then compare the addresses between the two years of IRS data to identify the number of exemptions that moved from one county to another between tax filings.

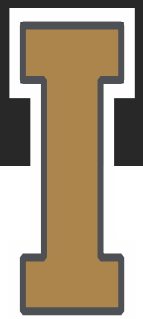
NOW I KNOW THE REAL CHALLENGE:

- In an area with 600,000 original residents, we moved out about 100,000.
- And we added about 130,000 new residents from other states.
- In the meanwhile, some of your original residents passed away.
- Fortunately, some new original residents were born.
- And as a planner I know nothing about these new people or the people that they have replaced



BUT THERE IS ALL THIS DATA OUT THERE THAT COULD HELP US PLANNERS MAKE MUCH BETTER DECISIONS

There are people out there that have the data that planners need to make truly informed planning decisions.



University of Idaho
College of Art and Architecture

There are the fitness apps such as HUMAN

Today in Boise

The average activity for people in Boise **Today at 11:49 AM** local time.

Walking
5:47.176 min
Today Yesterday

Biking
0:16.894 min
Today Yesterday

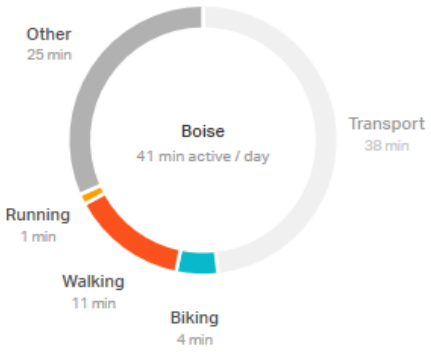
Running
0:46.673 min
Today Yesterday

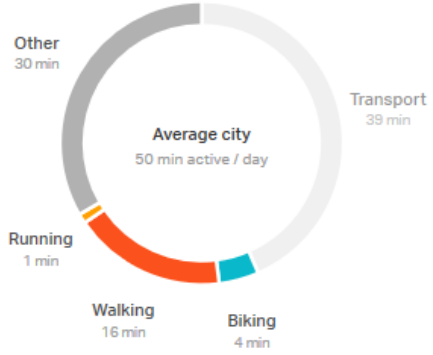
Other activity
11:15.112 min
Today Yesterday

So far, **31 people** in Boise tracked **560 minutes** of activity in total today, an average of 18 minutes per user. Yesterday **62 people** clocked **3,275 minutes** of total activity in Boise, an average of 40 minutes per active user.

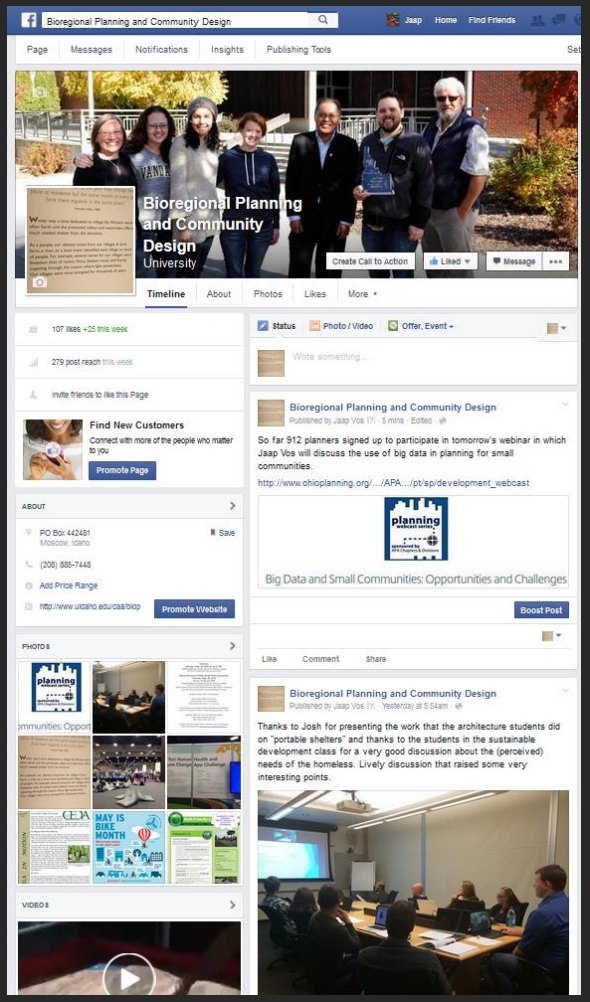
Boise vs the world

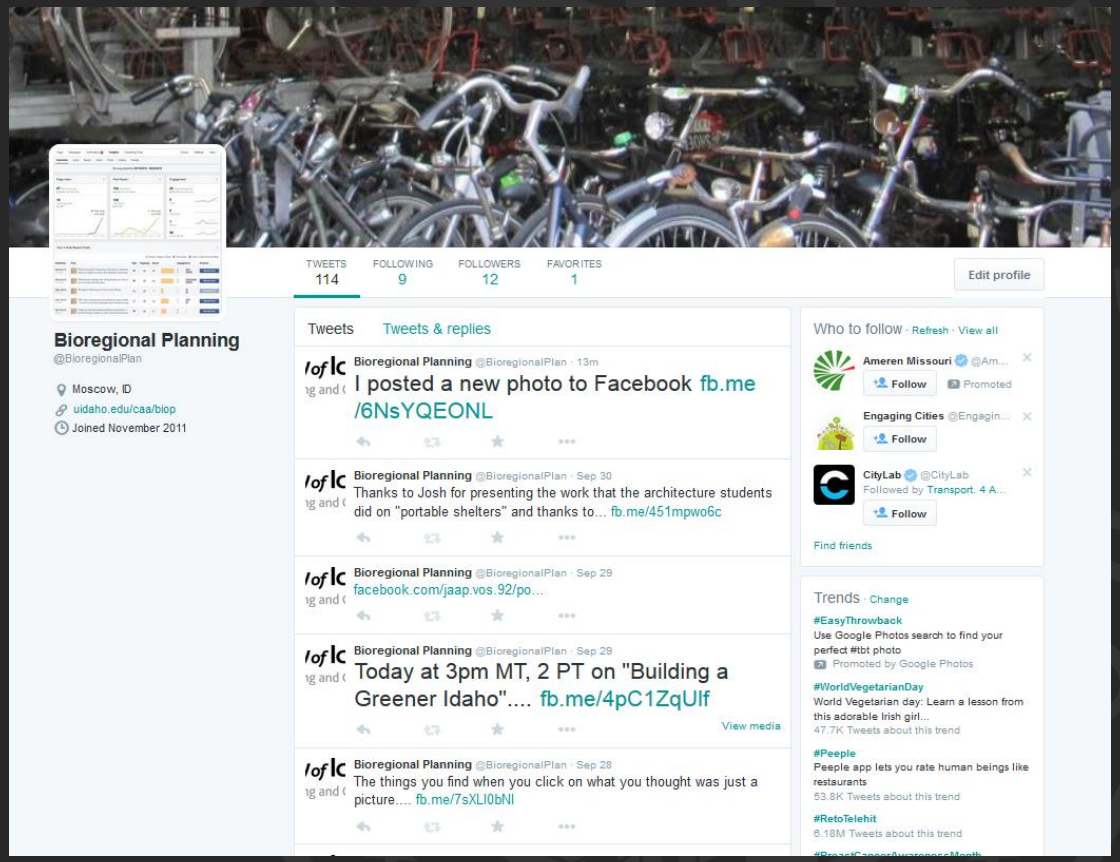
Compare an average day in Boise to the average of all other cities on Human.





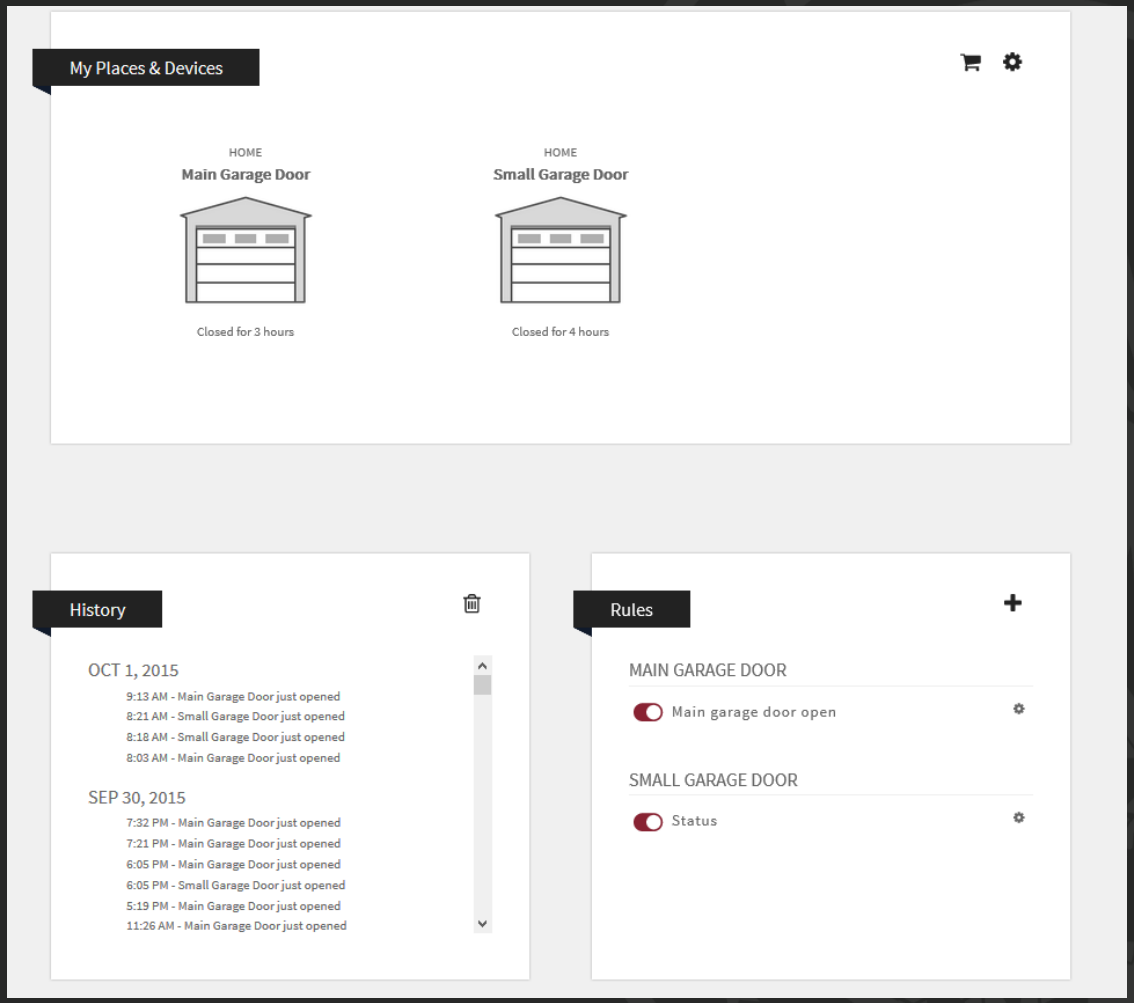
University of Idaho
College of Art and Architecture





Facebook, Twitter and other social media sites

University of Idaho
College of Art and Architecture

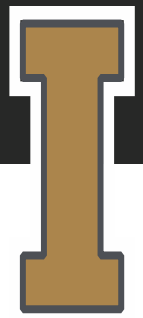


Garage door openers and other remote controlled devices

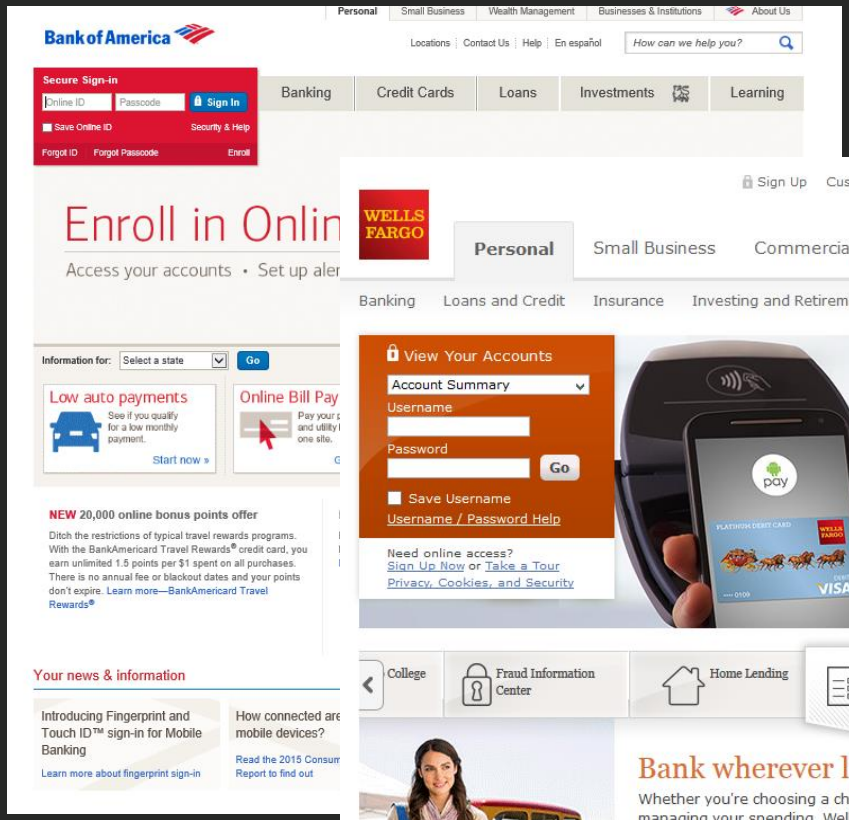
University of Idaho
College of Art and Architecture

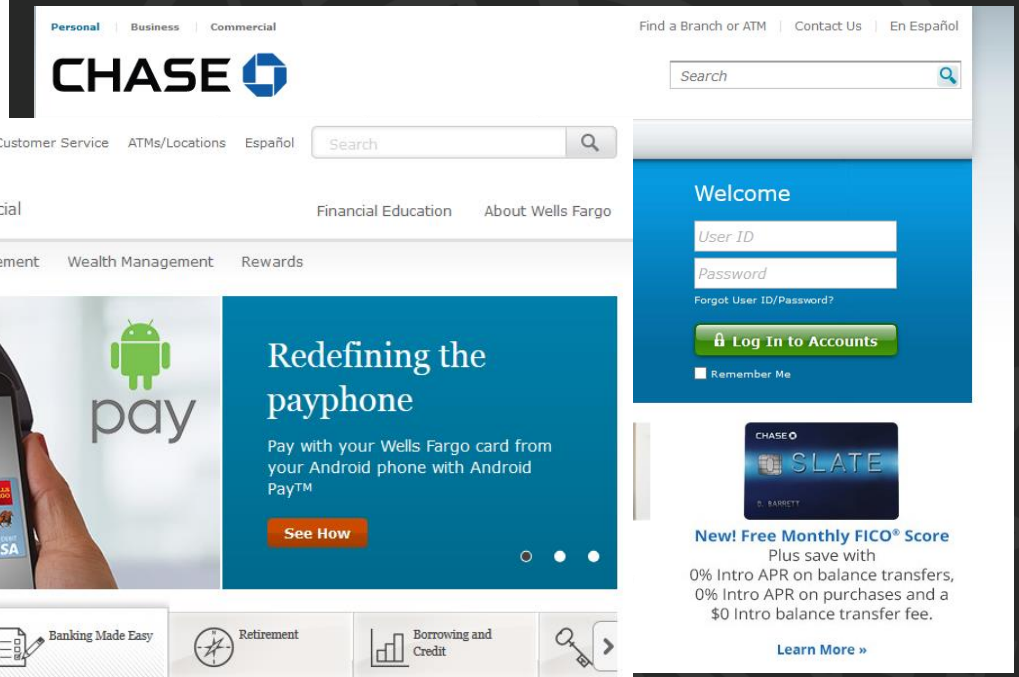
Extensive citizen data will continue to be used by corporations as valuable information for exchange on the free market, with over $300 billion in Internet of Things (IoT) goods and services expected to be exchanged by the year 2020.[72] Citizens will actively enable some of this data exchange, but if it's anything like what we have seen from the data monetization of social media activity, it's likely that many citizens will not be aware of how much of their personal data is owned and exchanged. Private sector technology companies collect an increasing amount of data. Consider Facebook, which collects an astonishing 500 terabytes of data on its users each day.[73] These data are then manipulated and monetized, generally by allowing advertisers to target potential customers based on various demographic variables. The monetary worth of the data varies based on numerous factors. AVG's PrivacyFix tool estimates the value of an individual's data to a variety of companies (e.g., Google and Facebook) ranges from pennies to hundreds of dollars per year.[74] Such data afford politicians, lobbyists, and others with deep pockets the ability to purchase more information on citizens compared to their financially limited peers, increasing their odds of access to civic power through financial rather than democratic means.

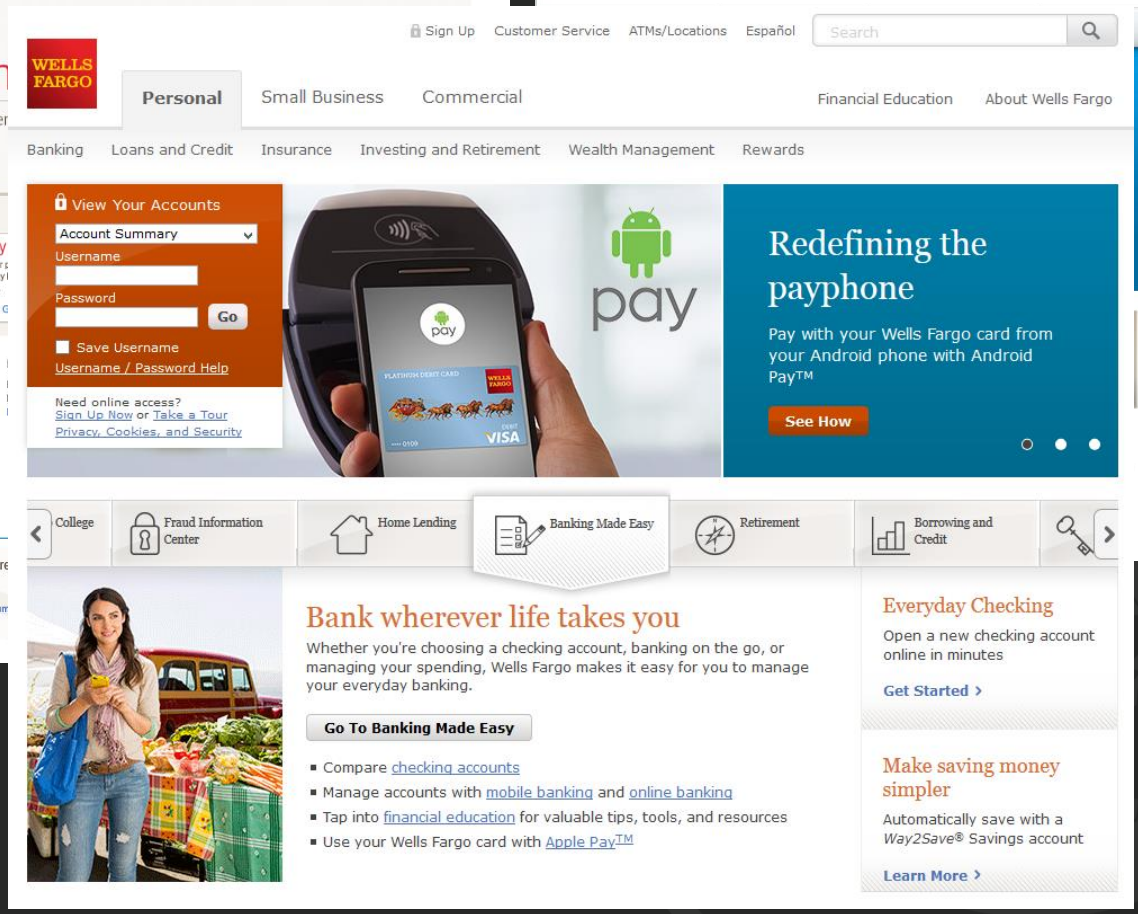
There is all the data that your wireless service provider collects without you realizing.



University of Idaho
College of Art and Architecture

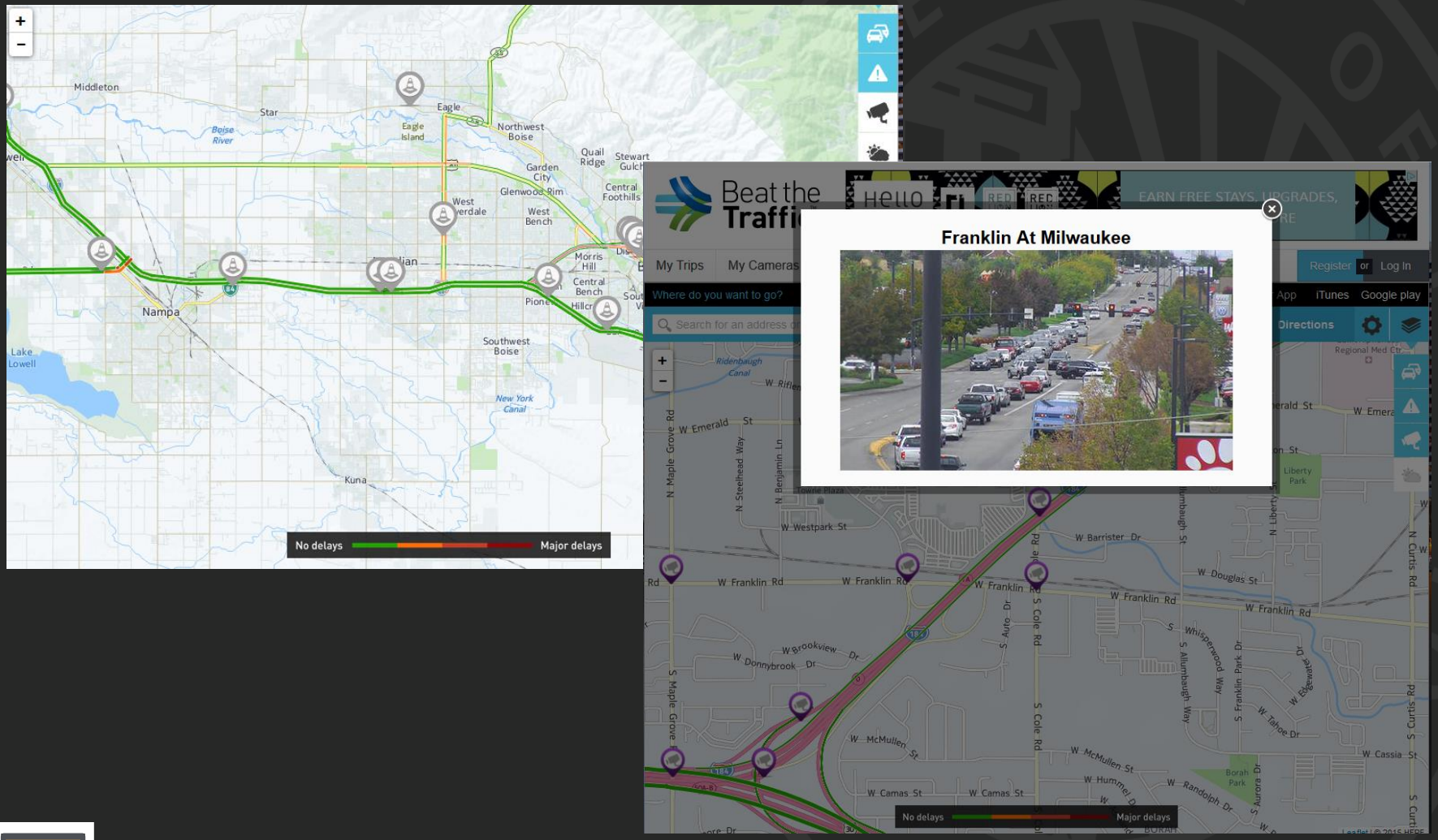






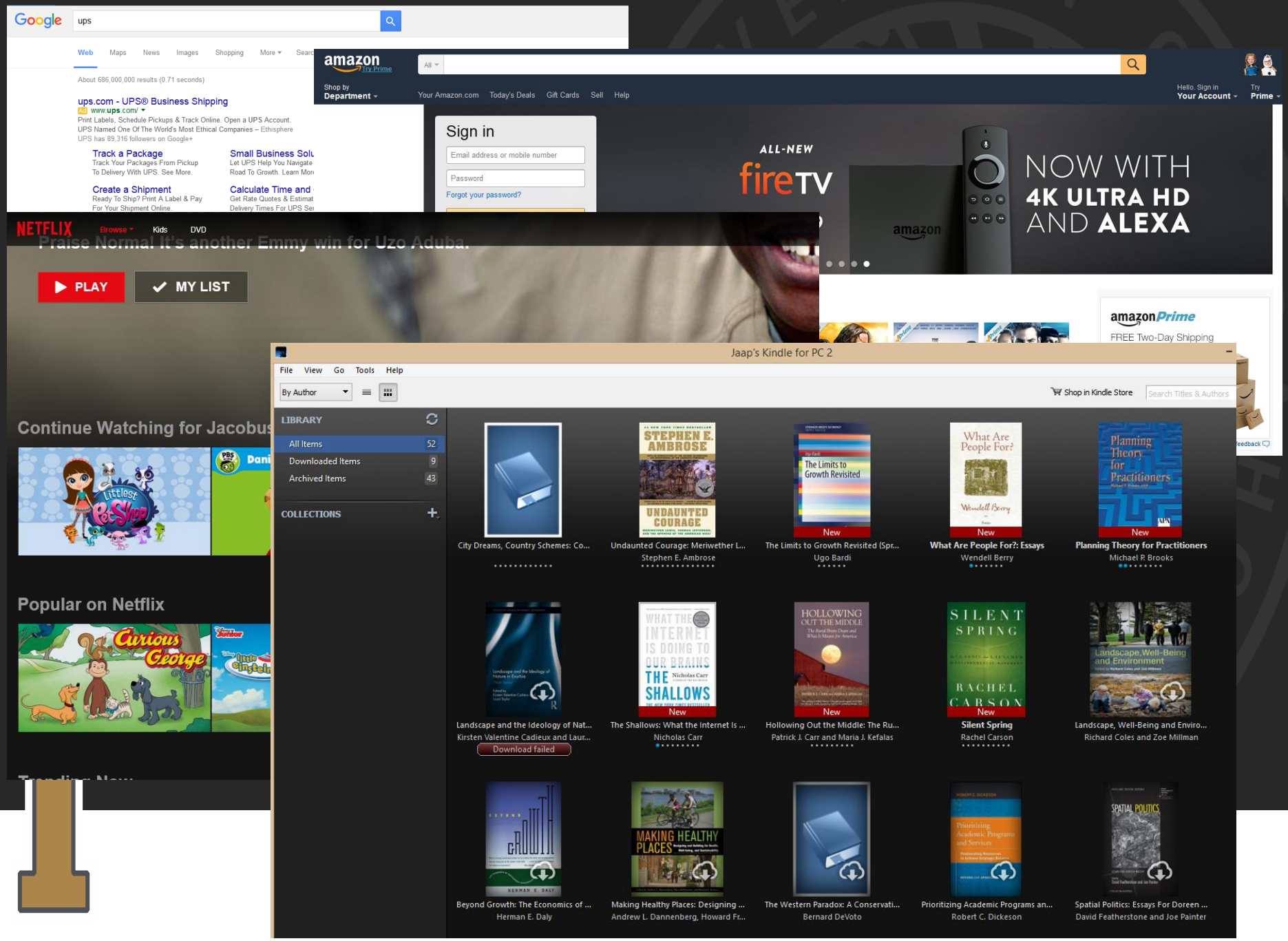
Banks

University of Idaho
College of Art and Architecture

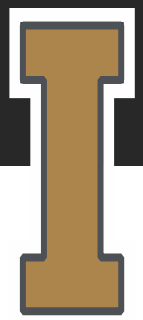


Traffic and traffic cameras …. and

University of Idaho
College of Art and Architecture

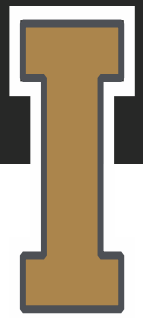

Google
ups
Web
Maps
News
Images
Shopping
More
About 686,000,000 results (0.71 seconds)
ups.com - UPS® Business Shipping
www.ups.com/
Print Labels, Schedule Pickups & Track Online. Open a UPS Account.
UPS Named One Of The World's Most Ethical Companies – Ethisphere
UPS has 89,316 followers on Google+
Track a Package
Track Your Packages From Pickup To Delivery With UPS. See More.
Small Business Solu
Let UPS Help You Navigate Road To Growth. Learn Mor
Create a Shipment
Ready To Ship? Print A Label & Pay For Your Shipment Online.
Calculate Time and
Get Rate Quotes & Estimat Delivery Times For UPS Se
amazon
Try Prime
All
Shop by Department
Your Amazon.com
Today's Deals
Gift Cards
Sell
Help
Hello. Sign in
Your Account
Try Prime
Sign in
Email address or mobile number
Password
Forgot your password?
ALL-NEW
fireTV
NOW WITH
4K ULTRA HD
AND ALEXA
amazon
NETFLIX
Browse
Kids
DVD
Praise Norma! It's another Emmy win for Uzo Aduba.
PLAY
MY LIST
amazonPrime
FREE Two-Day Shipping
Continue Watching for Jacobus
Littlest Pet Shop
Popular on Netflix
Curious George
Jaap's Kindle for PC 2
File
View
Go
Tools
Help
By Author
Shop in Kindle Store
Search Titles & Authors
LIBRARY
All Items 52
Downloaded Items 9
Archived Items 43
COLLECTIONS
City Dreams, Country Schemes: Co...
Undaunted Courage: Meriwether L...
Stephen E. Ambrose
The Limits to Growth Revisited (Spr...
Ugo Bardi
What Are People For?: Essays
Wendell Berry
Planning Theory for Practitioners
Michael P. Brooks
Landscape and the Ideology of Nat...
Kirsten Valentine Cadieux and Laur...
Download failed
The Shallows: What the Internet Is ...
Nicholas Carr
Hollowing Out the Middle: The Ru...
Patrick J. Carr and Maria J. Kefalas
Silent Spring
Rachel Carson
Landscape, Well-Being and Enviro...
Richard Coles and Zoe Millman
Beyond Growth: The Economics of ...
Herman E. Daly
Making Healthy Places: Designing ...
Andrew L. Dannenberg, Howard Fr...
The Western Paradox: A Conservati...
Bernard DeVoto
Prioritizing Academic Programs an...
Robert C. Dickeson
Spatial Politics: Essays For Doreen ...
David Featherstone and Joe Painter

YET, PLANNERS MAKE MAJOR DECISIONS ABOUT OUR COMMUNITIES BASED ON DATA THAT IS COLLECTED BY SOME FEDERAL AGENCY BASED ON SAMPLES AND CONJECTURE.



SOME FACTS ABOUT BIG DATA

- More data has been created in the past two years than in the entire previous history of the human race.
- About 1.7 megabytes of new information will be created every second for every human.
- In five years there will be over 50 billion smart connected devices in the world.
- By 2020, at least a third of all data will pass through a cloud.
- At the moment less than 0.5% of all data is ever analyzed and used.



Science of Cities

Would You Share Private Data for the Good of City Planning?

BY HENRY GRABAR | JANUARY 27, 2015

The biggest meeting of data leaders from the telecom industry is happening next week!

As the amount of data collected continues to rise exponentially, operators are gathering to discuss the unprecedented challenge of extracting as much value as possible

Are you looking for new ideas and insight on do all of the above? Download the agenda to see the topics and insight we have put together.

How Wireless Carriers Are Monetizing Your Movements

Data that shows where people live, work, and play is being sold to businesses and city planners, as mobile operators seek new sources of revenue.

Verizon Wireless collects and uses mobile device location data for a variety of purposes, including to provide our mobile voice and data services, emergency services, and our and third-party location-based apps and services such as navigation, weather, mapping and child safety apps or tools. Verizon apps that use location information provide choices about the use of this information.

Many types of wireless apps and services use mobile device location data, including apps provided by other companies and wireless device operating systems. When you are considering new apps or services, you should carefully review the location-based services' or app providers' privacy policies to learn how they collect and use your information.

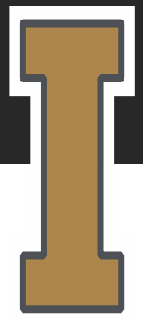
MIT Technology Review

Tuesday, March 26, 2013

How Access to Location Data Could Trample Your Privacy

The smartphone revolution will include unprecedented surveillance by companies hoping to make money from user data.

Will Knight



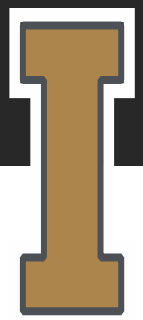
University of Idaho
College of Art and Architecture

ADVANTAGES OF BIG DATA

Near or real-time data

Ability to cross analyze and visualize data

Detailed and place specific data



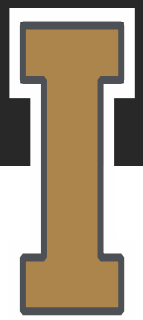
University of Idaho
College of Art and Architecture

DIS-ADVANTAGES OF BIG DATA

Is it reliable?

Does it have a bias?

Can we distinguish the data from the static?



WILL THIS DATA BE AVAILABLE TO PLANNERS IN SMALL COMMUNITIES?

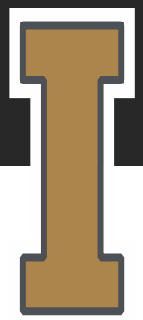
What does the data actually measure?

Will it create a systematic bias in data collection?

Is big data in small communities even useful for planners?

Can we protect people's privacy when we get to finer scale levels?

ARE WE AT A POINT THAT THE SKILLS THAT PLANNERS IN LARGE METROPOLITAN AREAS NEED FUNDAMENTALLY DIFFERENT FROM THE SKILLS THAT ARE NEEDED IN SMALL COMMUNITIES?



University of Idaho
College of Art and Architecture

BIG DATA AND SMALL COMMUNITIES: OPPORTUNITIES AND CHALLENGES

Jaap Vos, Ph.D.
Professor and Head
Bioregional Planning and Community Design
University of Idaho
jvos@uidaho.edu
208 364 4595
http://www.uidaho.edu/caa/biop
https://www.facebook.com/biop.bsci

University of Idaho
College of Art and Architecture