The 40th Annual

Applied Geography Conference

CONFERENCE PROGRAMS

AGC 2017

Kent State Symposium

November 10, 2017

Session Schedule

Session 1 (8:00 to 9:20 am)

Room: 305, McGilvrey Hall, Kent State University, Kent Campus

Research Paper Session – *General Geographic Applications*

Focus: A session including a wide spectrum of papers covering the diverse field of location intelligence, including an opportunity for general discussion.

Chair: Tony Hernandez

Presentations:

1. Oluwaseun Egbinola: Application of Geographical Information Systems (GIS) and Remote Sensing (RS) Techniques in Predicting Malaria Exposure in Nigeria

2. Xinyue Ye, Bing She and Shuming Bao: A Framework of Social Media Data and Census Data Fusion

3. John Green: Spatial Enrollment Patterns in South Dakota Public Universities, 2006 to 2015

4. Qiao Li: Spatial Spillover Effects of High-Speed Railways: Evidence from Northeast China

5. Murray D. Rice, Ron Kalafsky, and Ross Brown: The Geography of High-Growth Firm Acquisition in the United States

Morning Break 1 (9:20 to 9:35 am)

Session 2 (9:35 to 10:40 am)

Room: 305, McGilvrey Hall, Kent State University, Kent Campus

Research Paper Session – *Location Intelligence: Business and Data Applications*

Focus: A session including a wide spectrum of papers covering the diverse field of location intelligence, including an opportunity for general discussion.

Chair: Murray Rice

Presentations:

1. Mohammed-Rabiu Abubakari and Louisa M. Holmes: Food Accessibility – Grocery Store Locations and Neighborhoods in Binghamton, NY

2. Thomas J. Christoffel: 2020 Census Challenge: A Functional Sub-State District/ Regional Council Dataset for Research, Policy and Programming in the U.S.

3. Xuebin Wei and Xinyue Ye: How People Perceive El Nino on Twitter

4. William Graves: Demographic Data Vendor Bias and Retail Location Inefficiencies

Morning Break 2 (10:40 to 10:55 am)

Session 3 (10:55 am to noon)

Room: 305, McGilvrey Hall, Kent State University, Kent Campus

Research Focus Session – "The Retail Real Estate Aftermath of Department Store Closures: Target Canada"

Chair and Introducer: Murray Rice, University of North Texas; *Speaker:* Tony Hernandez; *Discussant:* Larry Carlson

Luncheon (noon to 1:30 pm)

Room: Kent State University Conference Hotel

Luncheon Speaker: Vince Corno, Brixmor Property Group

Topic – *Reflections on Retail Real Estate Research*

Session 4 (1:30 to 3:00 pm)

Room: 305, McGilvrey Hall, Kent State University, Kent Campus

Panel Session – *Geography and Retail Change*

Focus: Stores are closing, malls are changing, and E-commerce continues to evolve. This session attempts to make sense of these fundamental developments and explore the role that geographers can play in helping retailers and developers navigate through a turbulent age.

Chair: Clay Hallman; *Panelists:* Ken Smith, Kenard E. Smith & Associates; Larry Carlson, Carlson & Associates; Joe Tokosh, Kent State University; Dave Daleiden; Daleiden & Associates; Vince Corno, Brixmor Property Group

Afternoon Break (3:00 to 3:15 pm)

Session 5 (3:15 to 4:30 pm)

Room: 305, McGilvrey Hall, Kent State University, Kent Campus

Panel Session – *The Location Analytics Challenge*

Focus: Challenges on keeping current on research, including data and analytical issues. To set up the panel discussion, the session will begin with a presentation from Joe Aversa on current research practices, based on recent Ryerson University survey research on the analytical practices of Canadian business.

Chair: Tony Hernandez; *Panelists:* Clay Hallman, Simon Property Group; Ken Smith, Kenard E. Smith & Associates; Larry Carlson, Carlson & Associates; Joe Aversa, Ryerson University; Dave Daleiden, Daleiden & Associates

Informal Group Dinner (starting at 6:00 pm)

Venue plans to be announced at the conference

Abstracts

AGC 2017
Kent State Symposium
November 10, 2017

Session 1 (8:00 to 9:20 am)
Research Paper Session – *General Geographic Applications*
Focus: A session including a wide spectrum of papers covering the diverse field of location intelligence, including an opportunity for general discussion.
Chair: Tony Hernandez

APPLICATION OF GEOGRAPHICAL INFORMATION SYSTEMS (GIS) AND REMOTE SENSING (RS) TECHNIQUES IN PREDICTING MALARIA EXPOSURE IN NIGERIA. Oluwaseun Egbinola (newcreationman1@yahoo.com), University of Ibadan, Ibadan, Nigeria.

Abstract

In the developing world, malaria is a leading cause of mortality and morbidity most especially in Sub-Saharan Africa where the transmission rates are highest thus making it a major impediment to economic development. Despite several initiatives to curb the spread, the disease still persists and is re-emerging. The African situation is actually the worst where the number of deaths is actually increasing. The reasons for the re-emergence and persistence of malaria are many and varied. Environmental changes, economic reasons, declining control programs and mosquito and parasites adaptation to insecticides and drugs all contribute to the development of the disease.

Significant progress in monitoring of the environmental and anthropogenic factors which influences the reduction and the re-emergence of the disease have been made through developments within the past three decades in the field of GIS and Remote Sensing. Analyses resulting from the combination of GIS and Remote Sensing have improved knowledge of the biodiversity influencing malaria and can help decision makers to better allocate limited resources in the fight against the disease.

This paper will look into how variables such as temperature, rainfall, humidity, surface water, and vegetation, ownership and usage of bednet facilities which are all significant predictors for malaria infection can be analyzed using GIS and RS techniques in understanding the spatial and temporal dynamics of malaria infection in Nigeria.

Key Words: Geographical Information Systems (GIS), Remote Sensing (RS), Malaria

HOW PEOPLE PERCEIVE EL NINO ON TWITTER Xinyue Ye (xye5@kent.edu), Kent State University, Kent OH. Xuebin Wei (weixx@jmu.edu), James Madison University, Harrisonburg VA

Abstract

Social media, such as Twitter, Facebook, YouTube, etc., have become a critical resource where people gather and exchange information. Due to their fast dissemination and massive participation, the credibility of contents on social media is significant. In this paper, we investigated how people perceive El Nino, an extreme weather condition, on Twitter. We have collected Tweets mentioning 'El Nino' from December 2016 to January 2017, and geocoded most of the Tweets based on coordinates, place names or users' locations on their profiles. We have identified a significant increase of Twitter discussions about El Nino when a series rainstorms inundated California in January 2017. Although there were no recorded El Nino events during those rainstorms, many people, even some news media, mistakenly attributed that

weather disaster to an El Nino condition. Our findings indicate that massive discussions on social media don't guarantee credibility of the contents. Public perceptions can be misled on social media.
Key Words: GIS, Twitter, El Nino, Public Perception

SPATIAL ENROLLMENT PATTERNS IN SOUTH DAKOTA PUBLIC UNIVERSITIES, 2006 TO 2015 John Green (john.green@jacks.sdstate.edu), South Dakota State University, Brookings, SD

Abstract

In 2013, South Dakota State University announced their intention to increase campus enrollment numbers by over 2000 students over a five-year period. That enrollment goal was based on record high in-state enrollment trends in public universities in South Dakota from 2006 to 2010. However, in the period between 2011 and 2015, in-state enrollments at public universities in the state dropped by 3000 students.

That enrollment decline has created budget shortfalls and campus planning issues at all six public universities in the state. The spatial patterns of enrollment in the state reveal trends that may aid university officials in recruitment efforts. While distance and proximity create some obvious enrollment footprints for each school, other factors may be more responsible for statewide enrollment decline.

This paper uses Location Quotient scores and Spatial Gravity models to quantify market supply and enrollment probabilities for public universities in South Dakota. The results indicate that geographically targeted marketing may significantly increase enrollment at some public universities in South Dakota.
Key Words: gravity model, market delineation, post-secondary education

SPATIAL SPILLOVER EFFECTS OF HIGH-SPEED RAILWAYS: EVIDENCE FROM NORTHEAST CHINA Qiao Li (liq869@nenu.edu.cn), Northeast Normal University, Changchun, China, and Rensselaer Polytechnic Institute, Troy, NY

Abstract

The aim of this study is to summarize the primary literature on public infrastructure and regional economic growth by some methods based on empirical results. This paper examines the spatial spillover effects of public transportation infrastructure in northeast China, which is regarded as a controversial area according to some policies. The total data consists of 47 cities from the area during the period from 2004-2014 which are chosen to be output and input variables. The shortest travel time between two cities with high-speed railways and geographic distance are collected to set up spatial weight matrices. After getting all the logarithms of the data and the first-order difference, and the spatial econometrics models were used to estimate the spillover effects. The accessibility of every city changed a lot from 2004 to 2014, so that the accessibility is chosen to reflect the infrastructure development. The results indicate that positive and significant spillover effect exists after the construction of high speed railways (HSR) that means HSR is not only beneficial to the connected cities but also to the near cities.
Key Words: transportation geography, spatial spillover, econometrics

THE GEOGRAPHY OF HIGH-GROWTH FIRM ACQUISITION IN THE UNITED STATES Murray D. Rice (Murray.Rice@unt.edu), University of North Texas, Denton, TX; Ron Kalafsky, University of Tennessee, Knoxville, TN; Ross Brown, University of St. Andrews, St Andrews, Scotland.

Abstract

What happens to entrepreneurial, high-growth firms (HGFs) is an important but under-studied aspect of regional economic development. This paper investigates the subset of HGFs that are acquired by other businesses, with a specific focus on how these acquisitions vary geographically. The research analyzes three aspects of these acquisition transactions for the US *Inc. 500* group of HGFs: the geography

of *Inc. 500* firms being acquired, the geography of the firms completing these acquisitions, and the structure of the network connecting the two. The analysis demonstrates that the geographies of acquired and acquiring firms are distinctive, with many business communities in the US core being net acquirers of HGFs while business communities in peripheral regions of the US appear as net sellers. The paper defines and interprets these results, linking HGF acquisition activity to regional economic vitality and broader issues in the study of business and regional economic development.
Key Words: High Growth Firm, Inc 500, regional economic development, United States.

Session 2 (9:35 to 10:40 am)
Research Paper Session – *Location Intelligence: Business and Data Applications*
Focus: A session including a wide spectrum of papers covering the diverse field of location intelligence, including an opportunity for general discussion.
Chair: Murray Rice

FOOD ACCESSIBILITY: GROCERY STORE LOCATIONS AND NEIGHBORHOODS IN BINGHAMTON NY
Mohammed-Rabiu Abubakari (mabubak2@binghamton.edu), Louisa M. Holmes (lmholmes@binghamton.edu), Binghamton University, Binghamton NY
Abstract
Background: Recent literature on nutrition posited the existence of "food deserts," or residential areas lacking sufficient access to nutritious food options. Several studies indicate that areas with lower individual and neighborhood-level socioeconomic status (SES) have less access to healthy food options than areas with higher SES, and is detrimental to individual health. In this study, we examine relationships between grocery store locations and SES in Binghamton, NY – a former manufacturing town that now relies on the local university for growth.
Methods: Using American Community Survey 2011-2015 block group data, we analyze residential proximity to healthy food outlets in Binghamton in ArcGIS 10.4. Particularly, we evaluate the associations between median income, vehicle ownership and proximity to grocery stores.
Findings: We find no differences in proximity to supermarkets by income; Binghamton residents live within ½-mile of two groceries on average. However, there exist disparities in vehicle access; 96% of residents of higher-income areas own at least one car compared to 85% for those in lower-income areas with a car.
Key Words: Food Accessibility, Food deserts, Neighborhood Food Environment.

2020 CENSUS CHALLENGE: A FUNCTIONAL SUB-STATE DISTRICT/REGIONAL COUNCIL DATASET FOR RESEARCH, POLICY AND PROGRAMMING IN THE U.S.
Thomas J. Christoffel (Tom.Christoffel@gmail.com), Regional Intelligence-Regional Communities, LLC
Abstract
The promotion of multi-jurisdictional regional approaches for local development have been made since the 1920s. Metropolitan Councils of Government and regional planning commissions were incentivized and promoted in States from 1950s on. State agencies routinely use sub-state districts, though region boundaries vary agency to agency.
By Executive Order in 1972, Virginia Governor A. Linwood Holton required all State agencies using sub-state districts to use the 1968 defined Planning Districts or multiples. This administrative action enabled a rich regional dataset for agencies and the public, as all data was grouped by the PD number which acted as a FIPS region code and enabled planning coordination.

Most States have sub-state districts for localities, but there is no consistent numbering that may serve as a FIPS code. The only complete sub-state national data set of regions is at the County level. MSA geography does not cover all localities. Eurostat began the Nomenclature of Territorial Units for Statistics (NUTS) classification system for EU territory in the 1970s for regional analysis. It is proposed that an effort begin now for a system that would be ready for sub-state district aggregation of 2020 Census data. The author proposed a prototype in the 2013 AG volume.

Key Words: development, planning, sub-state, region, multi-jurisdictional, State

A FRAMEWORK OF SOCIAL MEDIA DATA AND CENSUS DATA FUSION

Xinyue Ye (xye5@kent.edu), Kent State University, Kent, OH, Bing She (bingshe@umich.edu) and Shuming Bao (sbao@umich.edu), University of Michigan, Ann Arbor, MI

Abstract

This paper will introduce a framework and a platform implementing the data fusion of social media data and census data fusion. The platform will present the newly developed web based tools and their applications for spatial studies. The paper will discuss how social media data sources, such as QQ data, can be quickly extracted, quantified, spatialized, and integrated with census data for spatial studies. Several tools will be introduced, including a web-based platform, China Geo-Explorer, to assist researchers to explore data through interactive charts, maps, and reports in real-time. China Geo-Explorer is a web-based spatial data service that allows easy access to a rich collection of unique, authoritative, and comprehensive information from government statistics, population and economic censuses, and many other data sources in a spatially integrated system with many powerful functions for exploratory spatial data analysis. Over the past few years, CGE have integrated a large amount of data from population censuses and economic censuses of China of different years with more than 6,500 variables in a web based spatial system. Data sources in this database include demographic and business information for all geographies in the People's Republic of China (PRC), including 31 provinces, 345 prefecture cities, 2,873 counties, and over 50,000 townships. Those census data of different years have been integrated with the base maps at different administrative levels. The census data came from the National Bureau of Statistics of China. The original map data came from the National Geomatics Center of China. Those base maps have been adjusted so that the data from different sources and years can be comparable across the time and space. These census data provide comprehensive information for population and business for all Mainland China at different administrative levels and different census years. The economic census data provide detailed business unit information, including companies, social organizations as well as religious institutions such as Buddhist temples, Taoist temples, Islam mosques, and Christin churches. Researchers can easily visualize the patterns, trends, and correlations of big data and census data in an on-demand fashion. Some case studies will be demonstrated for applications in spatial social science and humanities studies.

Key Words: Social Media Data; Census Data; Data Fusion; Spatial Social Science and Humanities

DEMOGRAPHIC DATA VENDOR BIAS AND RETAIL LOCATION INEFFICIENCIES William Graves (bgraves@uncc.edu), University of North Carolina at Charlotte; Brian Gerney, Gerney Research Group.

Abstract

Business geographers devote considerable effort to develop models of space to answer complex spatial questions. Unfortunately, little thought is given to the accuracy of the input data in these models. This paper examines the accuracy of tract level population and income data reported for the second quarter of 2015 from five spatial-demographic data vendors (Experian, Synergos/PopStats, ScanUS, ESRI and EASI) by comparing their estimates to American Community Survey (ACS) 5 year estimates. Data are

compiled for 80 Census tracts in the 40 fastest growing US metropolitan areas. Little agreement between data vendors was found – mean absolute percent errors (MAPE) for the 2015 population estimates were 8.9% greater than the ACS and MAPE for the 2015 median household income was 11.98% greater than ACS. A significant spatial variation in the magnitude of these errors was also found. MAPE values were consistently larger for urban tracts (11.85% MAPE for population and 14.7% for income) and lower for suburban tracts (6.09% and 9.27%). The magnitude of this bias grew after controlling for the size of tracts, errors increased substantially with urban tracts (MAPE values of 26.8% for population and 40.48% for income) while error rates in larger suburban tracts decreased. The biases we identified is likely to result in flawed location analysis in rapidly growing in-town neighborhoods and have important implications for retail development in revitalizing neighborhoods. Strategies for minimizing the impact of this error and for improving demographic data quality will also be discussed.