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空間情報分野

(筑波大学大学院生命環境科学研究科地球環境科学専攻)

Division of Spatial Information Science, Geoenvironmental Sciences,
Graduate School of Life and Environmental Sciences,
University of Tsukuba, Japan



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Content

1. Estimating spatial soil erosion distribution in Backan province, Vietnam <i>Duong Dang Khoi</i>	1
2. 景観と風力発電施設設置のあり方 <i>Rinka Yamamoto 山本倫芳</i>	12
3. 保健・医療分野における GIS を用いた研究 <i>Hiroki Takamatsu 高松 大樹</i>	13
4. 修士論文に向けて <i>Yusuke Hayashi 林 佑亮</i>	14
5. Spatial patterns of poverty and well-being in Bicol Region, Philippines <i>Brandon M. Vista</i>	15
6. Spatial patterns of a co-diagnosis system in Korea: A case study between a general hospital and other nationwide medical institutions <i>Soo-Kyung Park</i>	28
7. GIS を用いた火山防災に関する研究—ハザードマップの作成と地域防災計画への提言を通じて— <i>Kyosuke Eimura 永村恭介</i>	36
8. A construction of test bed for spatially integrated online surveying system: A case study in Tsukuba City <i>Ko Ko Lwin</i>	37
9. Perspective on forecast of Tsukuba City using integrated land-use and transportation model <i>Chiaki Mizutani</i>	46
10. Urban development and environmental consequences in Kathmandu valley, Nepal <i>Rajesh Bahadur Thapa</i>	53
11. Multi agent system for modeling urban dynamics: A case study of the Tokyo Metropolitan area <i>Yumin Zhang</i>	64
12. Network city analysis using international air passenger flow data: A global perspective <i>Ho-Sang Lee</i>	65
13. Location analysis of retail stores in Japan in terms of retail trade management type 業態別にみた日本の都市圏における小売業の立地分析—メッシュデータを用いて— <i>Nobuhiko Komaki 駒木伸比古</i>	66
14. 国会議員の後援会組織の地域的差異—衆議院富山県第三区選出議員を事例として— <i>Shingo Sato 佐藤慎吾</i>	82

Estimating spatial soil erosion distribution in Backan province, Vietnam

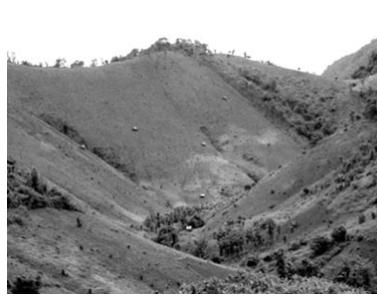
Duong Dang Khoi

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Abstract

Soil erosion is a serious environmental problem that poses a serious threat to sustainable agro-ecosystem in the northern mountainous area of Vietnam. Estimation of spatial soil loss from the existing dataset is very important especially in the highland area. Spatial soil loss estimation has been conducted for the area of Backan province, Vietnam. The objectives of this study are to estimate the spatial distribution of the soil loss magnitude; and to evaluate the extra productive cost under the study area. The Universal Soil Loss Equation (USLE) was integrated within IDRISI32 package to implement these two objectives. The results found that the estimated soil loss using USLE models falls between 1.0 to 247.2 ton ha⁻¹ year⁻¹. According to USLE model, about 66% of the total area was estimated to yield soil loss of less than 10 ton ha⁻¹ year⁻¹. Nitrogen was estimated to have the highest loss from this area (about 425 ton) followed by phosphorus (about 132 ton) and potassium (about 91 ton). The estimated cost of losses of NPK was at 3,033.0 million VND year⁻¹ or US \$153,808.2 year⁻¹.

Keywords: GIS, soil erosion modeling and USLE.



ESTIMATING SPATIAL SOIL EROSION DISTRIBUTION IN BACKAN PROVINCE, VIETNAM

DUONG DANG KHOI

Presentation outline

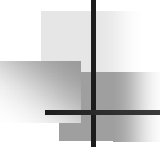
- Problem statement
- Objectives
- Methodology
- Results
- Conclusions



1. PROBLEM STATEMENT

● Babe district (location) is located in the northern part of Vietnam.

● Why soil erosion was happened in Babe? In recent years, soil erosion in Babe resulted from land cover reduction (land use) leading to onsite negative effects on soil productive capacity in the area. Such Similar trend (land cover) was widely occurred in northern Vietnam.



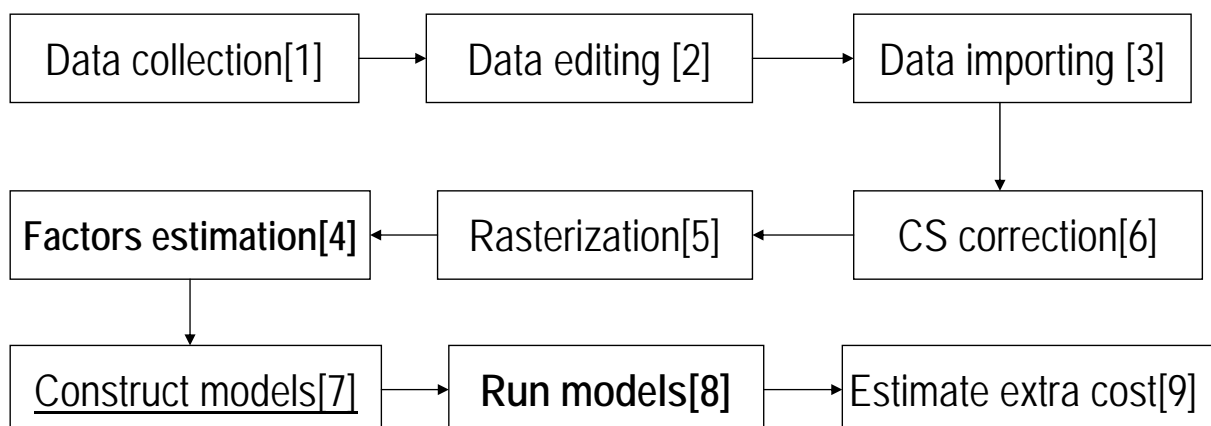
❖ Moreover, spatial variation of slope (slope map), high annual rainfall (rainfall figure) under poor vegetation cover resulted in accelerated soil erosion in the area.

❖ Therefore, soil erosion estimation providing the basic for soil conservation programs for this area is an urgent need.

2. OBJECTIVES

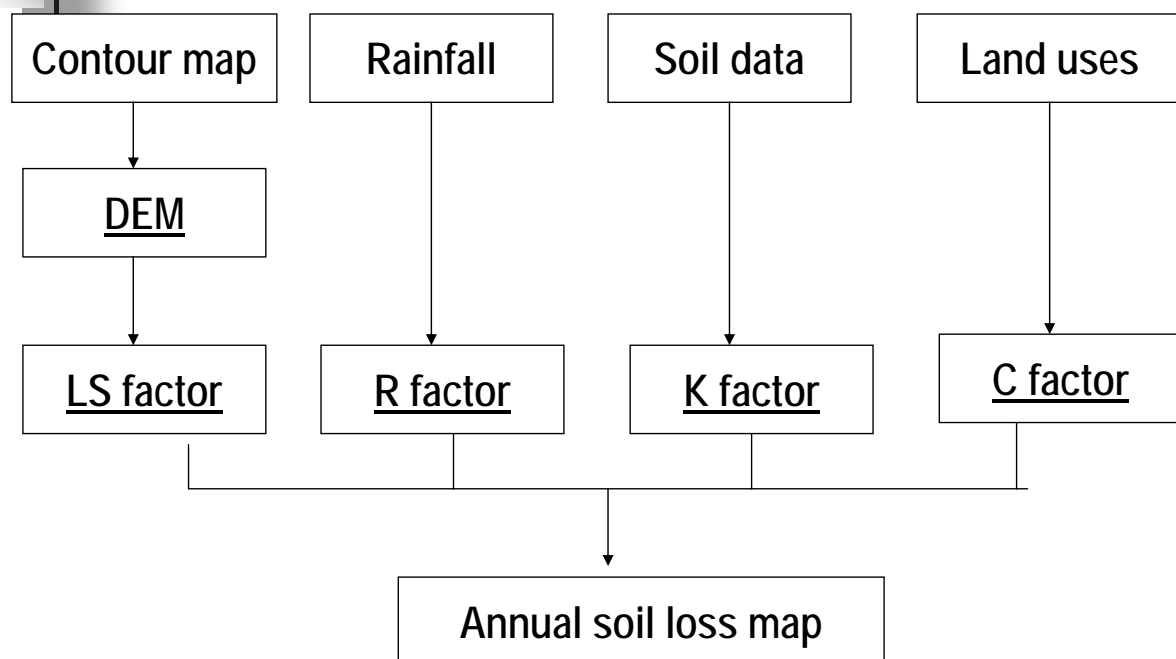
1. To estimate the spatial distribution of soil loss in Babe district, Backan province, Vietnam.
2. To evaluate the impact of soil loss on the extra productive cost in agricultural production.

3. METHODOLOGY

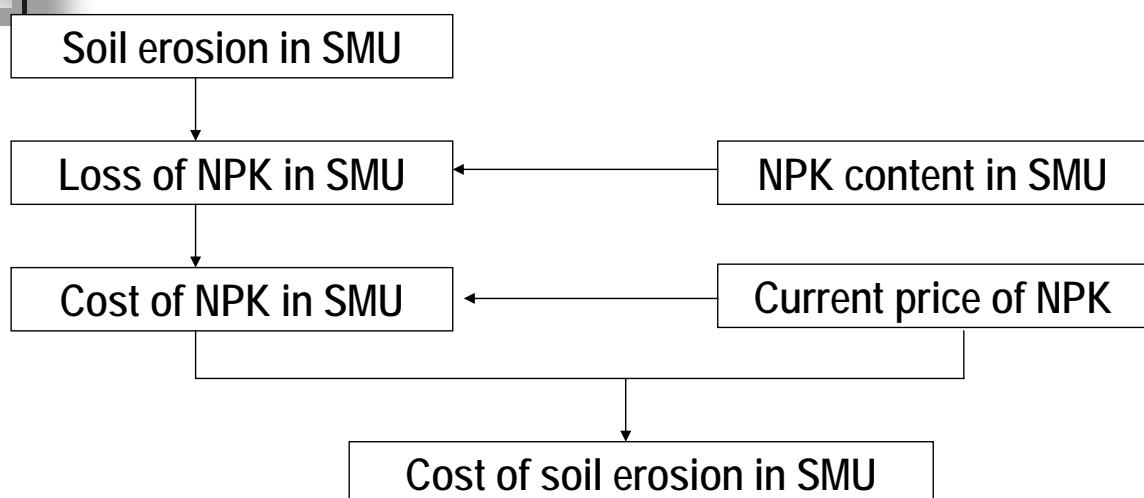


Soil loss and extra cost estimation process

3.1 USLE cartographic model



3.2 Estimating extra cost



Note: N, P, K content refers to only the top-soil layer



4. RESULTS

$$A = R * K * L * S * C * P \text{ (Wischmeier and Smith, 1978)}$$

A = mean annual soil loss
(ton ha⁻¹ year⁻¹)

The model variables are estimated as follow:



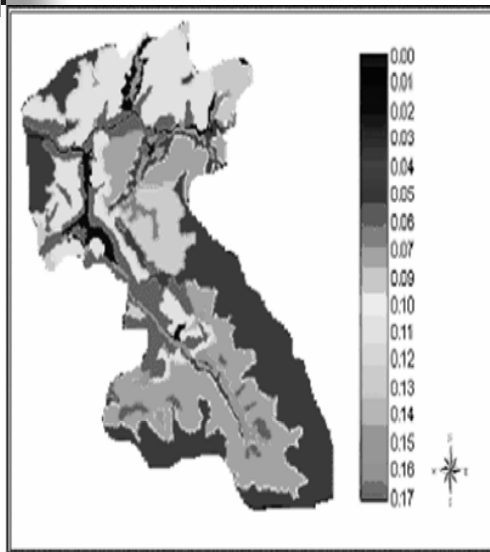
Factorial maps of USLE Model

R: rainfall erosivity index, assume the same in the entire area.

$$R = 0.548527P - 59.9 \text{ (Xiem, 1999)}$$

P = measured annual precipitation in mm

$$\underline{R = 683.68 \text{ MJ ha}^{-1} \text{ year}^{-1}}$$



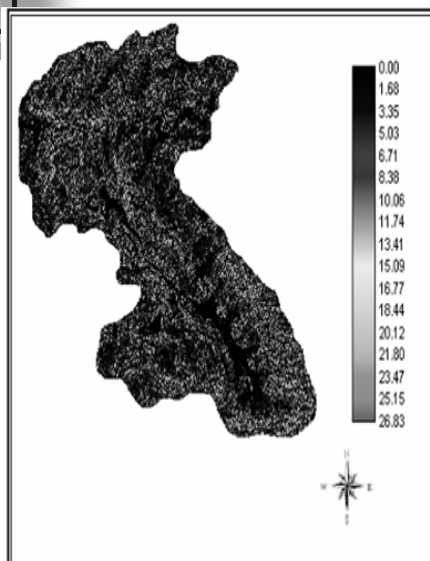
K = soil erodibility index ($\text{t ha}^{-1} \text{MJ}^{-1} \text{mm}^{-1}$)

Nomograph (Wischmerier et al., 1978) is estimated K using data of soil texture, soil organic matter, and soil permeability.

Fig.1: K-factor map

$$LS = (\chi / 22.13)^m (0.065 + 0.045S + 0.0065S^2)$$

(Wishchmeir and Smith, 1978)



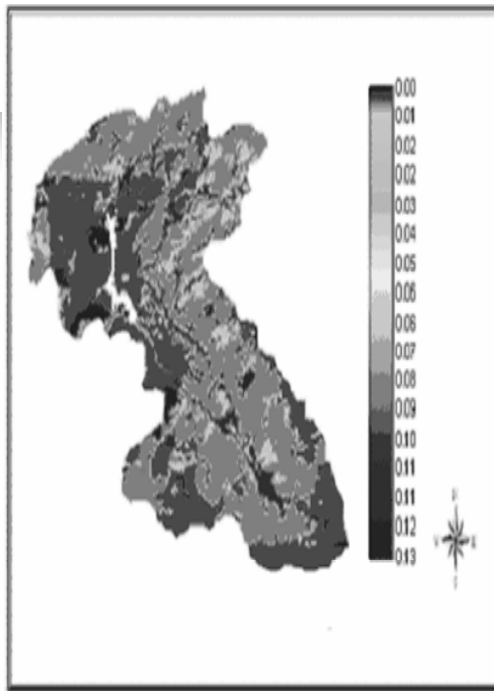
S = slope degree in percent

χ = flow accumulation * cell size

(Moore and Burch, 1986)

m: depending on slopping degree

Fig.2: LS Factor



C = crop management factor

It represents the ratio of the soil loss under a given crop to that from the bare soil. The C factor varies from 0.001 for forest, dense shrub and high mulch crops to 1.0 for bare soil (Wischmerier, 1978)

Fig.3: C Factor

P factor: conservation practice factor

It is estimated by comparison of ratio of soil loss under condition of a soil conservation practice is applied with that is not applied. The P values vary according to types of the *contouring and the strip cropping and the slope steepness* as well (Wischmeier and Smith, 1978).

P = 1.0 because there is no conservation practices applied in this area.

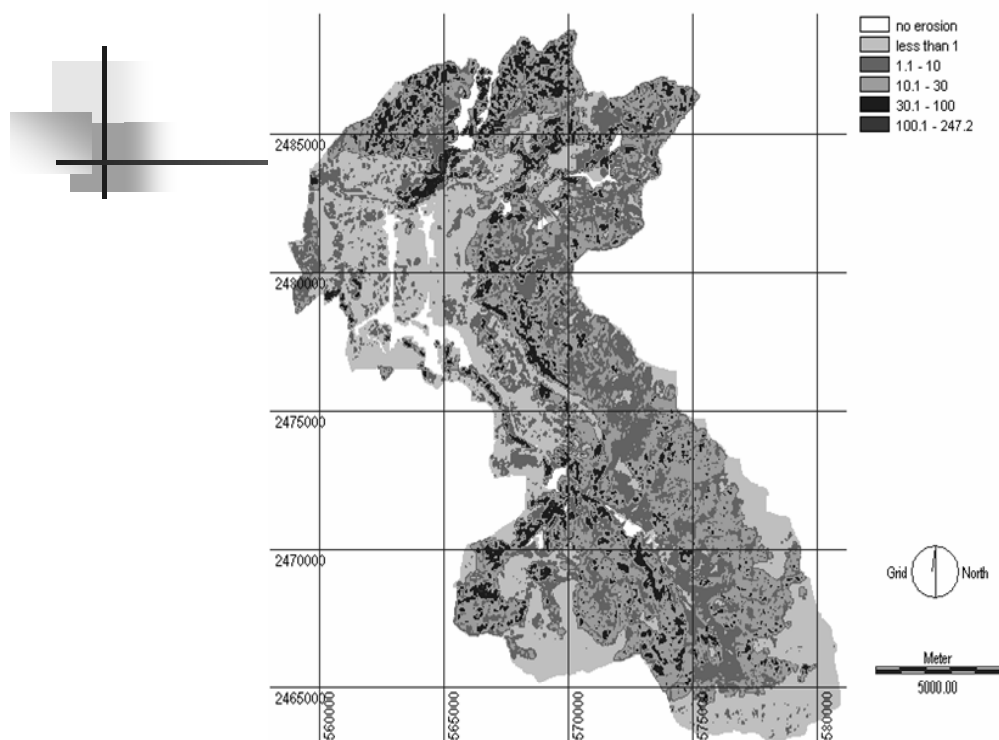


Fig.4: Soil loss map estimated by USLE (ton ha⁻¹ year⁻¹)

Table: The potential soil loss estimated by USLE		
Rate of soil loss (ton ha ⁻¹ year ⁻¹)	Area (ha)	Percentage (%)
<1	10,446.47	33.18
>1 to <10	8,835.93	28.07
>10 to <30	9,093.75	28.89
>30 to 100	3,063.56	9.73
> 100 to 247	41.18	0.13
Total	31,480.89	100

4.2 Cost of losses of NPK in the study area

Types of nutrients	Original amount (tons)	Fertilizer (tons)	Cost (Mill Vnd)	Cost (\$US)
Nitrogen (N)	425.34	924.65	2,034.22	132,092.48
Phosphorus (P)	132.89	830.56	664.45	43, 146.10
Potassium (K)	91.17	151.98	334.35	21,710.81
Total			3,033.02	153,803.29

Note: (1) fertilizer N contains 46 % original amount of N; (2) fertilizer P contains 16 % original amount of P; (3) fertilizer K contains 56 % original amount of K.

5. CONCLUSIONS

◆ The result of soil loss estimation found that about 66% of the total area with less than 10 tons ha⁻¹ year⁻¹ estimated by USL. Soil loss varies from less than 1 to 274 ton ha⁻¹year⁻¹.

◆ 76.8 % of the total area need to apply soil conservation practices to reduce the high soil erosion level, particularly in area with soil loss level of over 10 ton ha⁻¹ year⁻¹.

◆ According to USLE estimation, Nitrogen was the highest loss from this area (about 425 tons) followed by Phosphorus (about 132 tons) and Potassium (about 91 tons). The total cost of losses of estimated NPK was at 153,808.28 \$ US year⁻¹.

◆ GIS based USLE model is a useful tool for estimating spatial soil loss under different farming systems and recommending feasible land conservation practices.

◆ It can replace traditional soil erosion study which is the method of soil loss measurement at field plots.

Thank for your attention!



景観と風力発電施設設置のあり方

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キーワード: 風力発電, GIS, 視覚特性, 景観評価

(1) 既存研究

これまで風力発電に関する研究は風車のブレードやタービン, 風車モデルや風速測定方法, シミュレーションによる立地選定, 風速の実態把握など技術開発研究が数多くなされてきた. また, 社会科学からのアプローチに関しては, 立地地域住民からみた景観評価や新エネルギーに対する意識調査, 風力発電導入経緯の事例調査などがある(上坂 1997, 大岸ほか 2006, 馬場ほか 2006, 古賀ほか 2002). しかし, 社会科学における日本の風力発電に関する研究は, 自然科学や工学に比べると圧倒的に数が少ないといえる.

近年, 各地で急速に風力発電の導入が進んでおり, 特に民間企業による高さ 100m 以上の風力発電を数十基備える大規模風力発電施設の建設が増加しており, 風力発電施設の大型化・集合化傾向は続くと考えられる. そのため, 風力発電と環境に関してしばしば浮上する景観, バードストライク, 騒音といった問題がこれまでに増して注目されると考えられ, これら社会科学からの研究が必要であるといえる.

(2) これからの研究希望

風力発電施設に対し, 新たな大規模人工地物の出現という視点で研究をしていきたい. 風力発電に対する人々のイメージは, 地球温暖化防止対策のシンボリック的存在として見なされること等から, 送電鉄塔などと比較して景観上良い印象を与えるという意見がある一方で, 風光明媚な自然景観との不調和や不気味で目障りといった意見もある. 景観は人間の心的現象であるとされており純粋に物質的な現象ではないが, 景観把握については人間に共通した視知覚特性等によって規定されうるといえる(宇田 2005). まず GIS 上で立地特性別に分け意識調査の対象地域を見つけていきたいと思う.

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保健・医療分野における GIS を用いた研究

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(1) 保健・医療分野における GIS の活用

日本では 1995 年の阪神淡路大震災の復興支援事業を契機に, GIS は各種の地理的思考・意思決定を支援する情報基盤として幅広く認知された. GIS は保健医療分野にも非常に有効なツールで, 分析研究や意思決定の地理的問題に使用されてきている. また, 住民に必要な情報を提供する WebGIS も普及しつつある.

* 保健医療における地理的な問題の例

- 幹線道路からの大気汚染や川の環境汚染の拡散及び原因の追及
- インフルエンザや麻疹などの感染症の拡散経路の分析や被害予測
- 死亡率の分布図などから健康水準の有意な格差を見つけだし, 是正すべき公衆衛生上の目標の設定を定め, 提案する
- 医療需要と地域特性などによる分析から, 医療圏の設定および是正
- 医療施設の立地(住民からのアクセシビリティ, 患者マーケティングの二側面)

(2) 先行研究

卒業論文で歯科医院へのアクセシビリティを研究し, 保健医療圏とアクセシビリティの問題に強い関心をもっている. このような医療サービス系の先行研究には, 医療経済学分野, ヘルスサービスリサーチ分野, 介護分野, 救急医療分野, 建築分野そして地理分野からも研究がされてきた.

- 医療経済分野…医療サービスの公平性(アクセス, 必要に応じた医療サービス, 医療サービスの結果としての健康水準から)
- ヘルスサービスリサーチ分野…保健医療圏の設定方法や病院のサービス圏の設定
- 介護分野…高齢者介護施設のニーズと十分で最適な配置の研究
- 建築分野や救急医療, 地理分野…病院までのアクセス時間の測定や救急自動車の最適配置の研究

(3) 今後の課題

これからの研究にはまだまだ未確定の部分が多いが, 卒業論文では歯科医院へのアクセシビリティを距離的側面と, 選択枝数の側面からの考慮に留まってしまった. そのほかにも, 病院の診療科数や規模(医師数, 病床数)などによる重力モデルのあてはめ, 距離減衰効果の導入, ロコミなどの評判を考慮した医療環境の分析なども行って, 住民の医療施設の選択とどのように関わっているのかを確かめてみたい. また, 二次医療圏の設定の問題や, 都市部と農村部の医療格差についても研究してみたい課題である.

修士論文に向けて

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(1) 卒業論文および先行研究の紹介

卒業論文では関東地方における人口構造の変容について紹介した。これを発展させていくためには人口構造の変容の要因を具体的に示していくことが必要であると考えられるが、その要因は複雑に絡み合っていて、これらをすべてまとめて説明することは困難ではないかと考えられる。その土地に居住している理由は主に、
社会的要因……年齢、性別、職業、収入、世帯構成
環境的要因……生活環境、地価、職場までの時間
心理的要因……認知度、イメージ、知り合いがいる
その他………住宅地や交通網の整備、ニュータウン

があるのではないかと考えられる。今回は藤井ほか(2004)が東京大都市圏の市区町村の人口構造を世代間のバランスから分析した論文を参考にしながら、今後の研究を考えていきたい。

この論文は、1954～1964年生まれとの親世代の人口バランスを GBI という数値として求め、1980 年と 2000 年を比較して考察し、人口の流出入について述べている。右の図はそれを 9 つに分類した結果である。卒論の図に近いものとなっているが、より詳細に区分されている印象がある。また、都心から西に 30km ほど離れた所沢市と日野市を例にして、町丁別の分析も同様に行っている。これにより、市区町村の中でも世代間のバランスが大きく異なっていることを明らかにしている。

(2) 修士論文に向けて

- 対象地域の問題→広くするか狭めるか？

人口構成の変化の要因に重きを置くのであれば、対象地域は狭めるということが必要。あるいは、事例調査としていくつかの市区町村にスポットを当てていく方法や、一つの都市圏内で構造の要因を調査するのであれば、他の都市圏(政令市～大規模県庁所在地レベル)で調査をすることも一つの方法ではないか。

- どの要因に重点をおいて研究するのか？

先に述べたように、人口構造の変容の要因は多岐にわたっている為に、いずれかの要因に視点を当てなければ論点がぼやけてしまう。今のところ、「住宅地や交通網の整備」や「生活環境」を中心に研究していく予定である。

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藤居多希子, 大江守之 2005. 世代間バランスからみた東京大都市圏の人口構造分析. 日本建築学会計画系論文集 593:123-130.

Spatial patterns of poverty and well-being in Bicol Region, Philippines

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Abstract

Poverty has many faces, diverse from place to place and has been described in many ways. According to a recent view from the World Bank “Poverty is multi-dimensional, extending from low levels of health and lack of education, to other ‘non-material’ dimensions of well-being...”. As such, although monetary indicators, i.e. consumption and income, are widely considered the most reliable measures of poverty, social and structural indicators describe facets of human-well-being that are not easily captured by purely economic measures. A careful analysis of the spatial patterns of poverty in tandem with multiple indicators of well-being is therefore needed to further understand and deepen the analysis of poverty condition of a particular geographical location. On this regard, this research aims to explore the spatial patterns of poverty and well-being. Specifically, it attempts to unveil the disparities among places and establish the relationship between poverty with respect to the various indicators of well-being.

For poverty variable, the study still adopted the traditional measure, i.e. poverty incidence which is derived from levels of income or consumption, as the basic indicator of poverty in a particular place or locality. On the other hand, well-being has been further decomposed into three aspects: 1) Social-economic aspects which include health and nutrition, education and land ownership which is substituted by the status of agrarian reform implementation; 2) Demographic aspects such as population density, dependency which is characterized by age structure, ethnicity, and migration; and 3) Access to basic living necessities which is determined in terms of sources of water, fuel and manner of disposing waste or garbage.

To undertake this task, Bicol Region, one of the poorest regions in the Philippines for the last fifteen years was selected as the case study area. Most of the data originated from the CY 2000 Census of Population and Housing and official datasets from various governmental bodies. Using GIS and simple cartographic techniques, poverty maps were overlaid with various aspects of well-being. A simple correlation statistics was conducted for every aspect of well-being in relation to poverty incidence. The study reveals interesting geographical disparities among localities and discloses the relationship between poverty with respect to some of the indicators of well-being. Poverty incidence is highly correlated with population density, dependency ratio, percentage of underweight children, non-survival rate among elementary students, percentage of accomplishments in land reform, percentage of households with low level source of water for drinking and cooking as well as for washing and bathing, percentage of households with low level sources of fuel for lighting and cooking, and percentage of household with low level of garbage disposal.

Keywords: poverty, well-being, poverty mapping, GIS, Bicol, Philippines

Spatial Patterns of Poverty and Human Well-being in Bicol Region, Philippines

SIS Summer Seminar at Yamanaka Lake

BRANDON M. VISTA

July 20, 2007

Faces of Poverty



Poor health, Malnutrition and Lack of Education

Faces of Poverty



**Lack of Access to
Electricity/Fuel**



**Lack of Access
to Water**



**Poor Sanitation and
Waste disposal**

Faces of Poverty



Access to land



Demographic Structure

Research Problem

- According to a recent view from the World Bank:

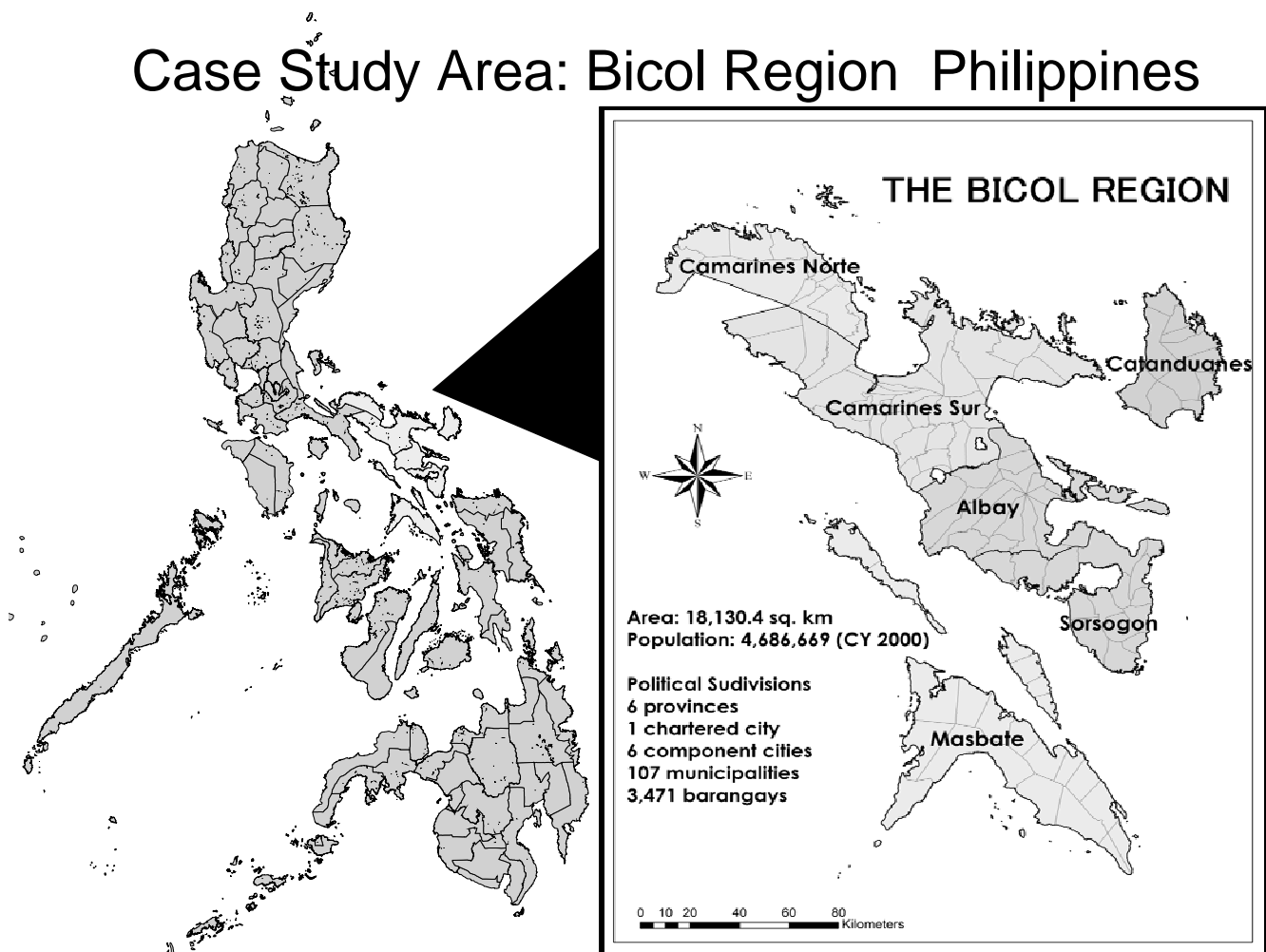
“Poverty is multi-dimensional, extending from low levels of health and lack of education, to other ‘non-material’ dimensions of well-being...”

- A careful analysis of the spatial patterns of poverty in tandem with multiple indicators of well-being is therefore needed to further understand and deepen the analysis of poverty condition of a particular geographical location.

Research Objective

- To explore the spatial patterns of poverty and well-being. Specifically, it attempts to unveil the disparities among places and establish the relationship between poverty with respect to the various indicators of well-being.

Case Study Area: Bicol Region Philippines

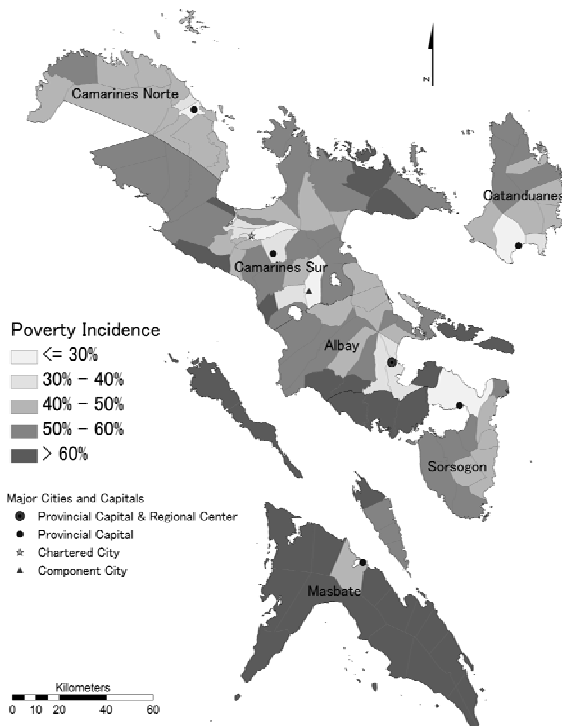


Matrix of Indicators

Dimension	Component	Verifiable Indicators	Source
Basic Poverty Measurement	Poverty Incidence	% of people living below poverty line	NSCB 2000, WB-ACSEM Project
Social- economic aspects of well-being	Health	Infant mortality rate	NSCB Bicol, 2004
	Nutrition	Percent of people who were born with less than 2.5 kgs.	NSCB Bicol, 2004
		Percent of people between 7 to 10 years old who are underweight	NSCB Bicol, 2004
	Education	Elementary survival rate	NSCB Bicol, 2004
	Land Ownership	% of land distributed under the agrarian reform program	DLR Region V, 2000
Demographic aspects of well-being	Population Density	Population per sq. km	NSO CY 2000 Census
	Dependency	% of minor and elderly	NSO CY 2000 Census
Access to life's basic necessities	Water Sources	% of households which source water for drinking is other than faucet and deep well	NSO CY 2000 Census
		% of household which source of water for washing/ bathing is spring, river, peddler, etc.	NSO CY 2000 Census
	Fuel Sources	% of household which source of lightning is other than electricity	NSO CY 2000 Census
		% of household which source of fuel for cooking is wood, etc.	NSO CY 2000 Census
	Garbage Disposal	% of household which usually dispose garbage is other than garbage truck.	NSO CY 2000 Census

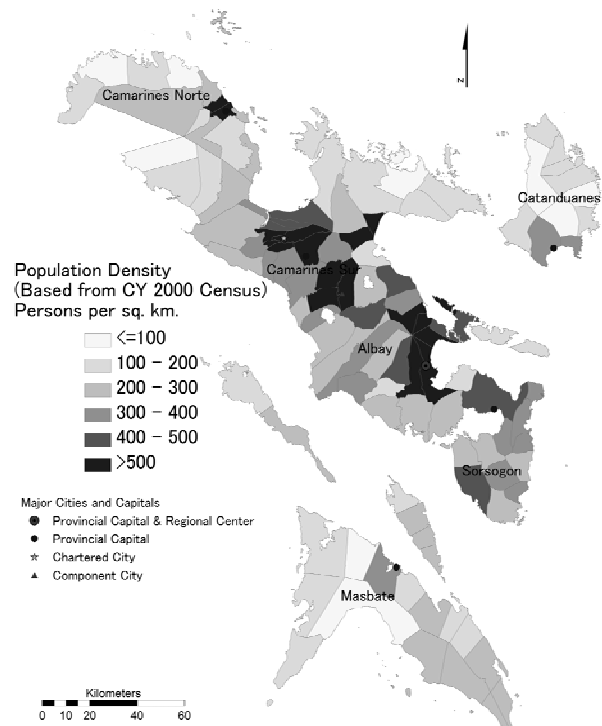
Local Poverty Incidence and Population Density

Poverty Incidence in Bicol Region



Source: Admin. Services (Globe), Inc. (Poverty Incidence 2003).
Note: Figures on poverty incidence are presented in a separate section, "Estimation of Local Poverty in the Philippines," as part of Poverty Mapping Project implemented by the National Statistical Coordination Board with funding from The World Bank ASEM Trust Fund. The estimates were based on CY 2003 Family Income and Expenditure Survey (FIES).

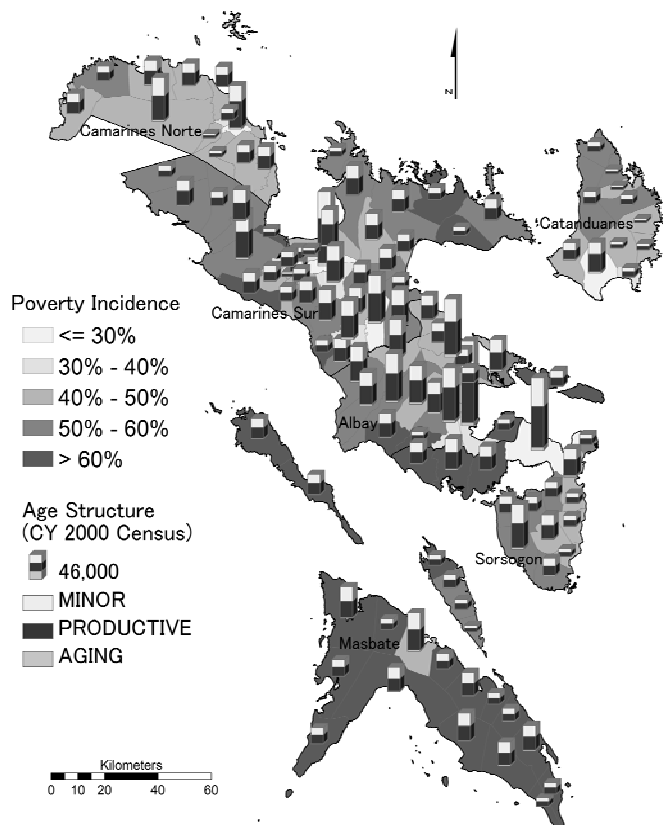
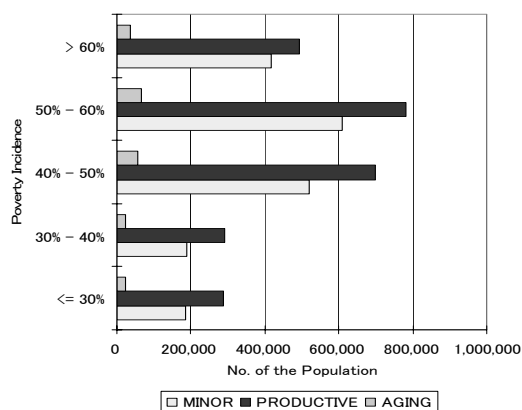
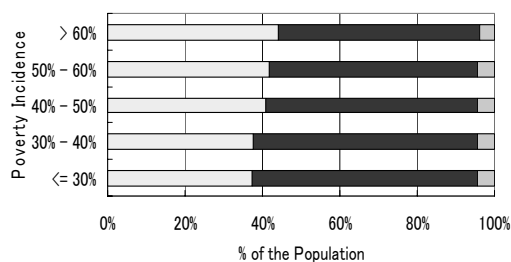
Population Density in Bicol Region



Source: Admin. Services (Globe), Inc. (Population Density 2000 Census from National Statistics Office and Land Use Data from Land Management Bureau).
Note: Figures on poverty incidence are presented in a separate section, "Estimation of Local Poverty in the Philippines," as part of Poverty Mapping Project implemented by the National Statistical Coordination Board with funding from The World Bank ASEM Trust Fund. The estimates were based on CY 2003 Family Income and Expenditure Survey (FIES).

Poverty and Age Structure of Bicol Regional Population

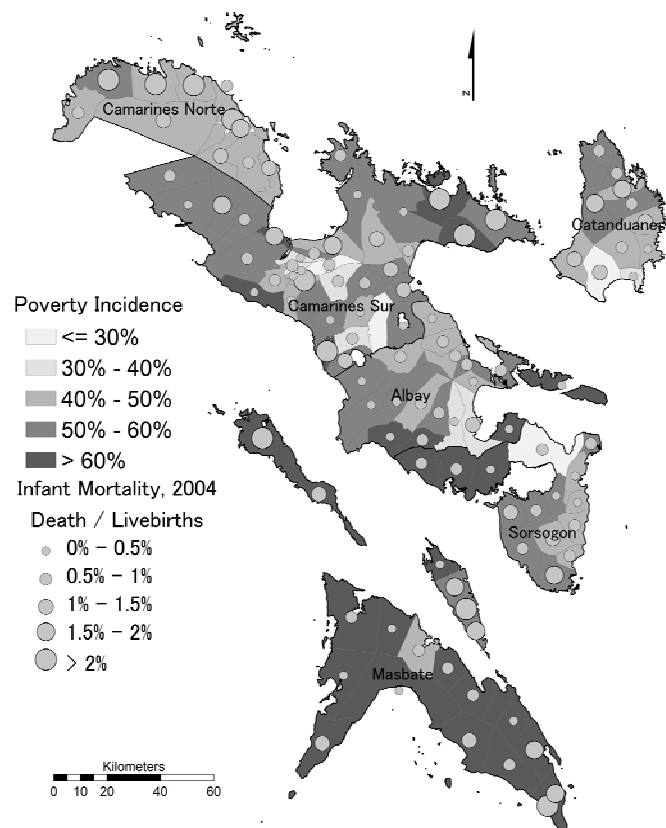
Poverty & Dependency



Source: Admin. Services (Globe), Inc. (Poverty Incidence: National Statistical Coordination Board; Age Structure: National Statistics Office; CY 2000 Census of Population and Housing).
Note: Figures on poverty incidence are presented in a separate section, "Estimation of Local Poverty in the Philippines," as part of Poverty Mapping Project implemented by the National Statistical Coordination Board with funding from The World Bank ASEM Trust Fund. The estimates were based on CY 2003 Family Income and Expenditure Survey (FIES).

Poverty and Health

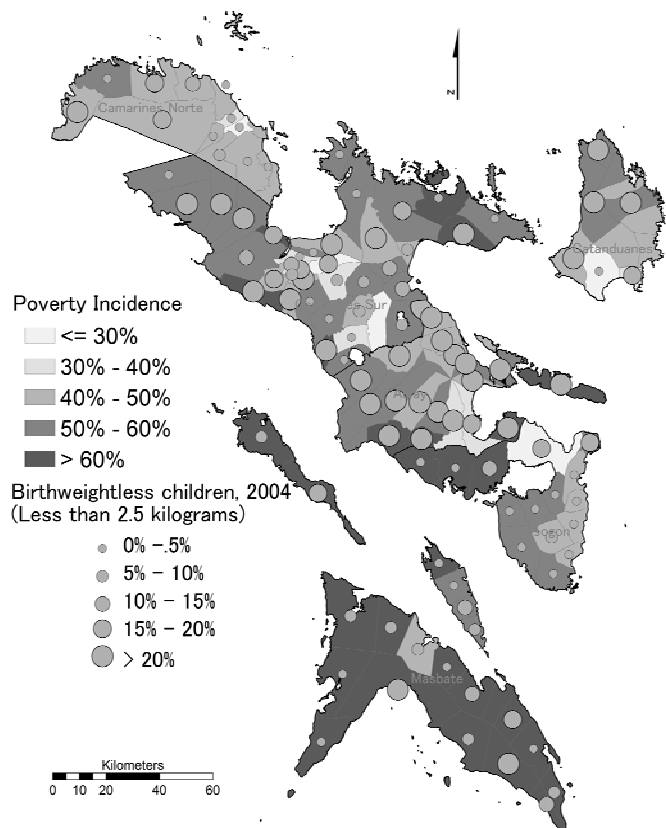
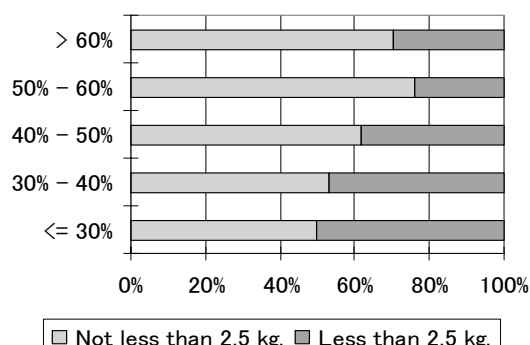
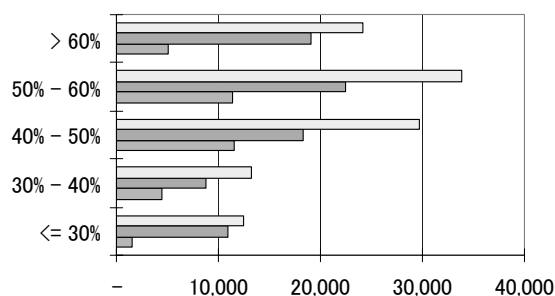
Poverty Incidence	Livebirths	Death	Infant Mortality Rate
<=30%	13,238	144	1.09
30% - 40%	12,590	93	0.74
40% - 50%	30,768	291	0.95
50% - 60%	33,303	287	0.86
>60%	24,167	229	0.95
Overall	114,066	1,044	0.92



Source: Asian Development Bank (ADB). Poverty Incidence: Monthly National Statistical Coordination Board (MNSCB) National Statistical Coordination Board - Social Research Office. Note: 1 square in poverty incidence was published in a report entitled "Poverty in the Philippines" as part of Poverty Mapping Project implemented by the National Statistical Coordination Board with funding from The World Bank ADBM Trust Fund. The estimates were based on 2000 Family Income and Expenditure Survey (FIES) - Total Sample.

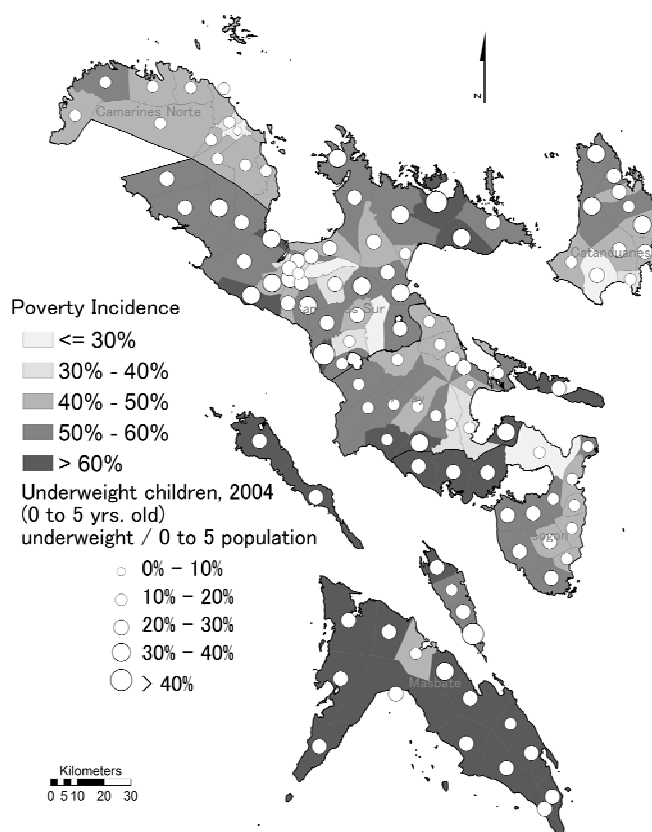
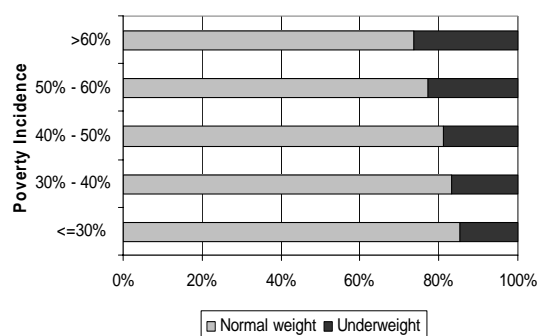
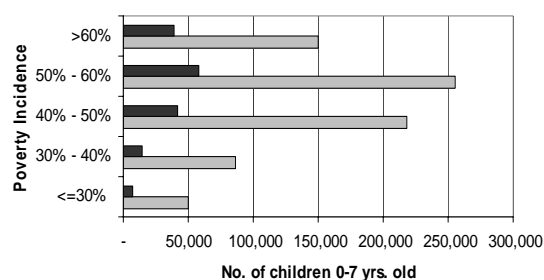
Poverty and Birthweightless children in Bicol Region

Poverty and Nutrition



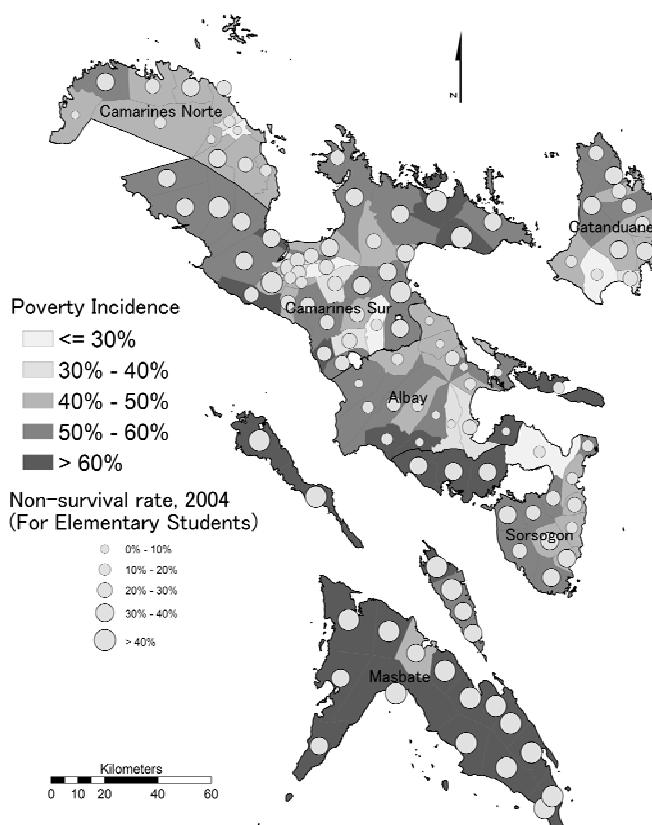
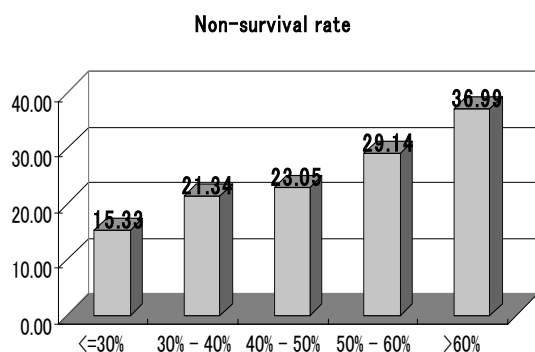
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Poverty and Underweight Children in Bicol Region



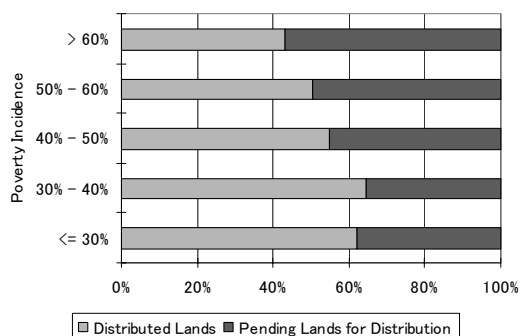
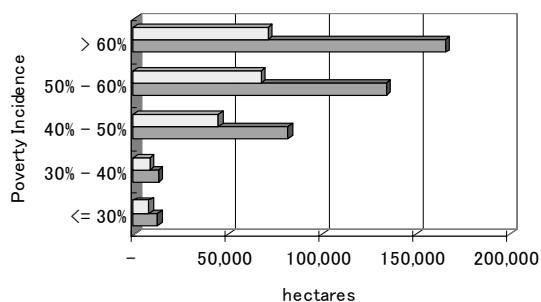
Sources: Admin. boundaries (Cybersoft, Inc.); Poverty incidence, Mortality (National Statistical Coordination Board); Underweight children (National Statistical Coordination Board + Basil Regional Office)
Note: Figures on poverty incidence were published in a report entitled "Estimation of Local Poverty in the Philippines" as part of Poverty Mapping Project implemented by the National Statistical Coordination Board with funding from The World Bank (JPM - Trust Inc.)

Poverty & Elementary Non-Survival among children in Bicol Region

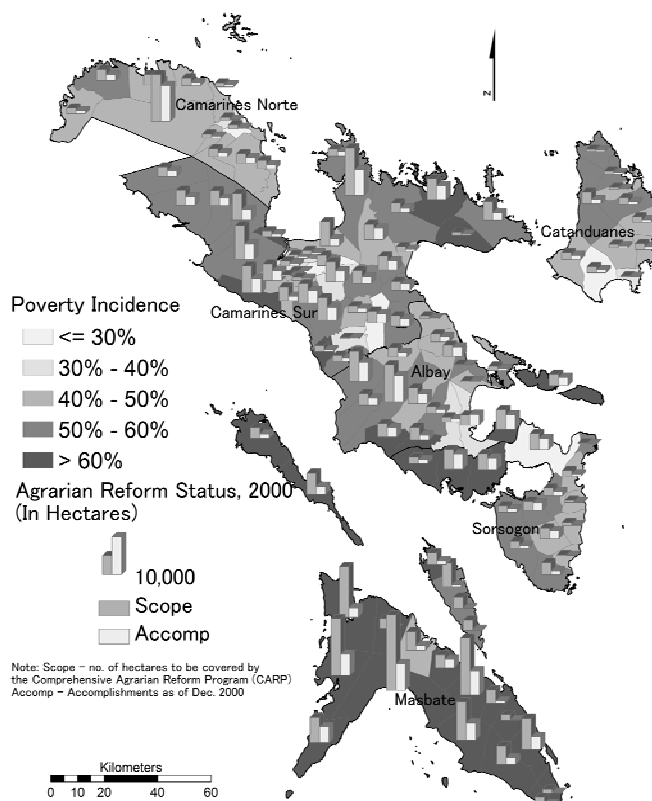


Sources: Admin. boundaries (GlobeSwift Inc.); Poverty Incidence, Mortality (National Statistical Coordination Board); Non-survival rate (National Statistical Coordination Board - West Regional Office).
Note: Figures on poverty incidence were published in a recent period. Estimation of Total Poverty in the Philippines, as part of Poverty Mapping Project implemented by the National Statistical Coordination Board with funding from The World Bank/ASDM Trust Fund.

Poverty and Land Ownership

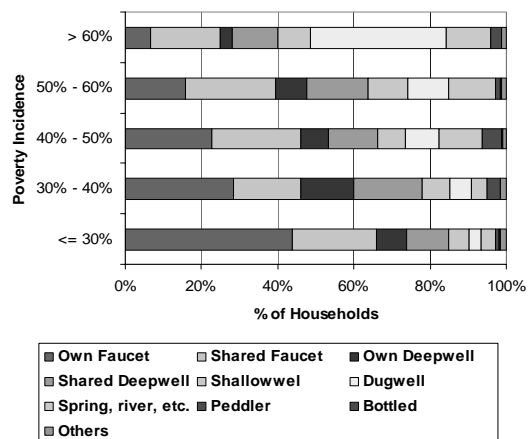
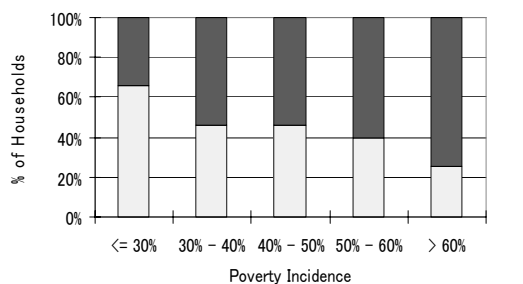


Poverty and Agrarian Reform in Bicol Region

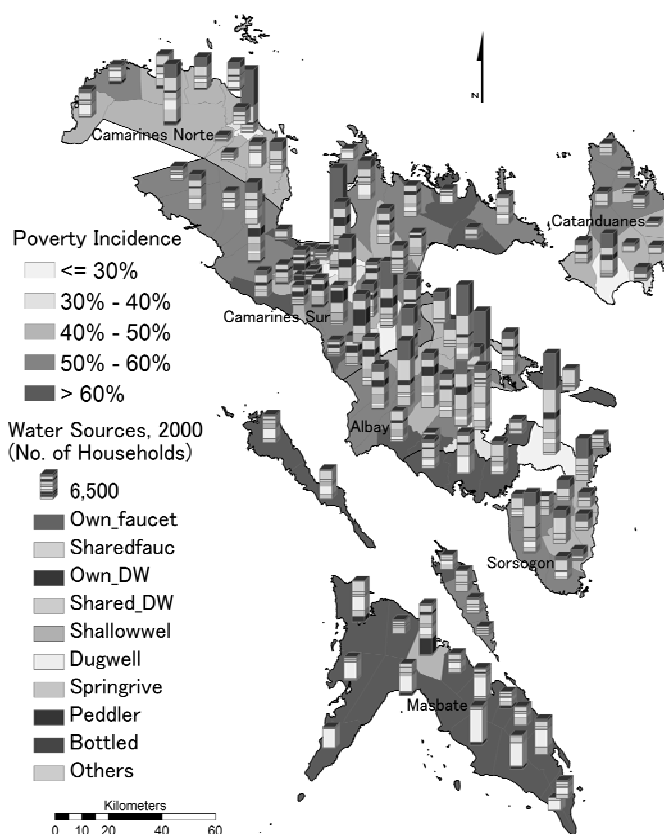


Source: Admin. Services Division (ASD), Poverty Incidence Mapping (National Statistical Coordination Board) - Agrarian Reform (Department of Land Reform - Regional Office 10, Naga City, Albay).
Note: Figures on poverty incidence were published in a report entitled "Estimation of Local Poverty in the Philippines" as part of Poverty Mapping Project implemented by the National Statistical Coordination Board with funding from The World Bank/ASDM Trust Fund. The estimates were based on 2000 Family Income and Expenditure Survey (FIES) - Total Sample.

Poverty and Access to Water for Drinking/Cooking

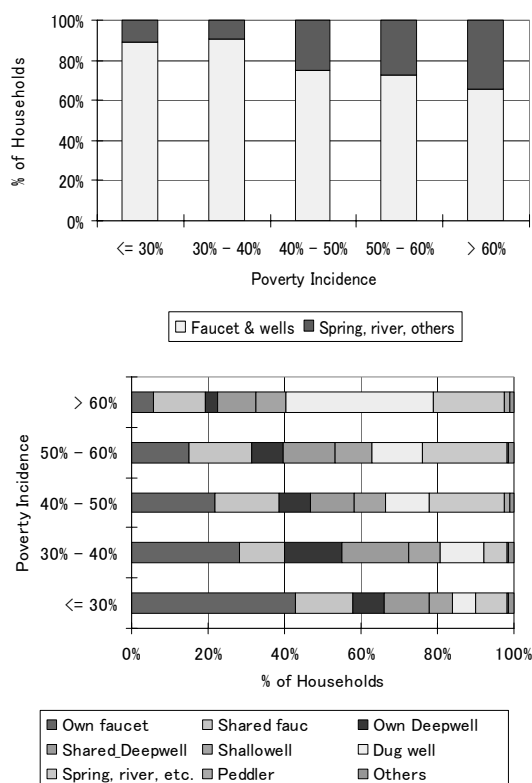


Poverty and Source of Water for Drinking/Cooking in Bicol Region

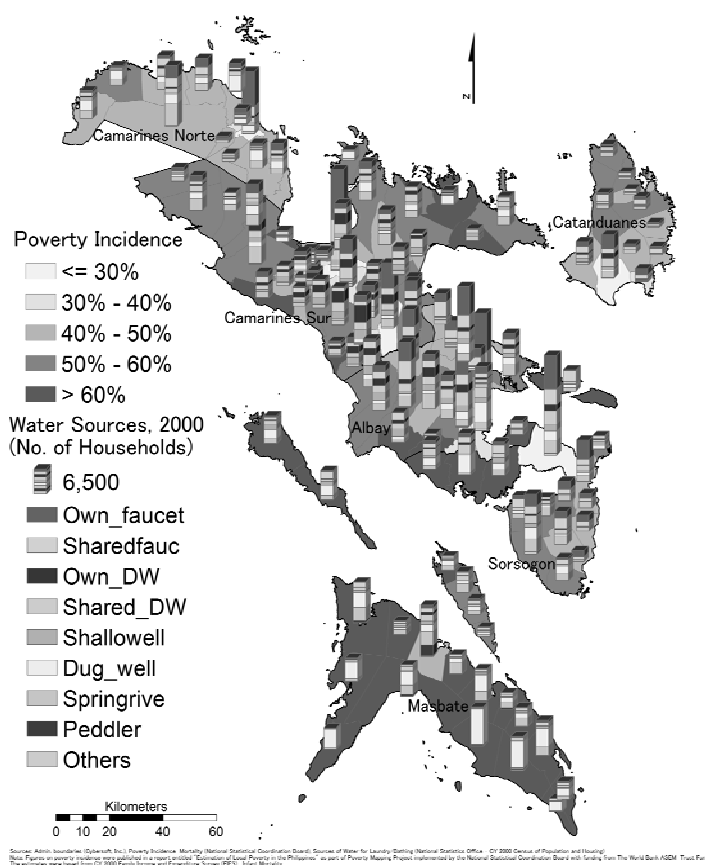


Source: Admin. Services Division (ASD), Poverty Incidence Mapping (National Statistical Coordination Board) - Sources of Water for Drinking and Cooking (National Statistical Office) - © 2000 Census of Population and Housing.
Note: Figures on poverty incidence were published in a report entitled "Estimation of Local Poverty in the Philippines" as part of Poverty Mapping Project implemented by the National Statistical Coordination Board with funding from The World Bank/ASDM Trust Fund. The estimates were based on 2000 Family Income and Expenditure Survey (FIES) - Total Sample.

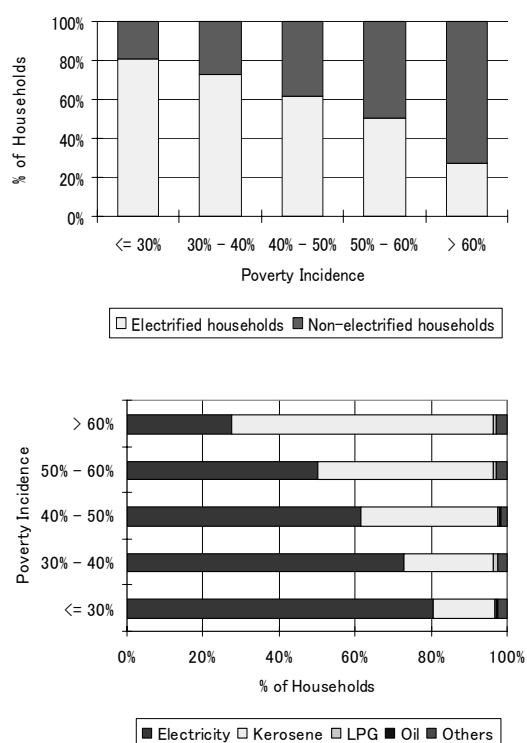
Poverty and Access to Water for Laundry/Bathing



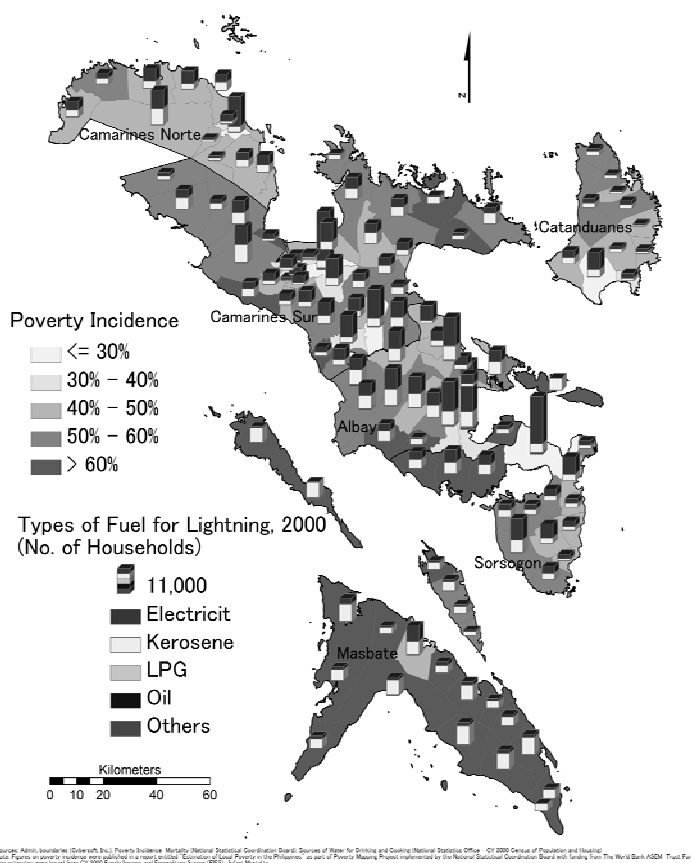
Poverty & Source of Water for Laundry/Bathing in Bicol Region



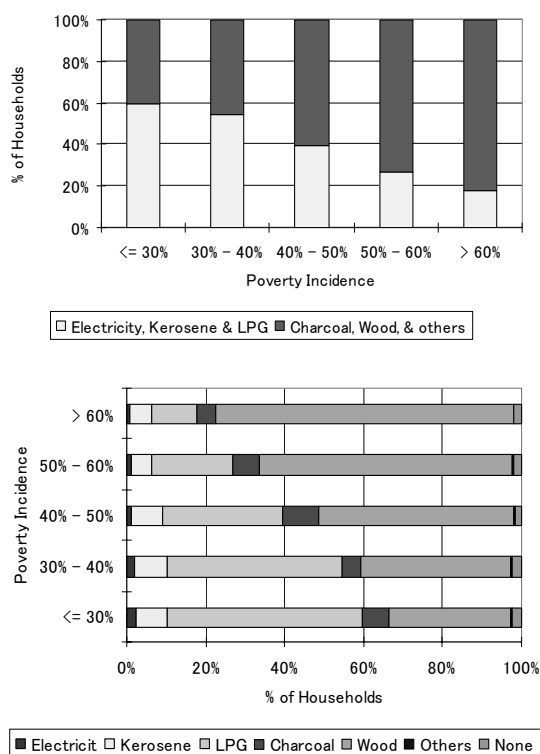
Poverty and Access to Electricity for Lightning



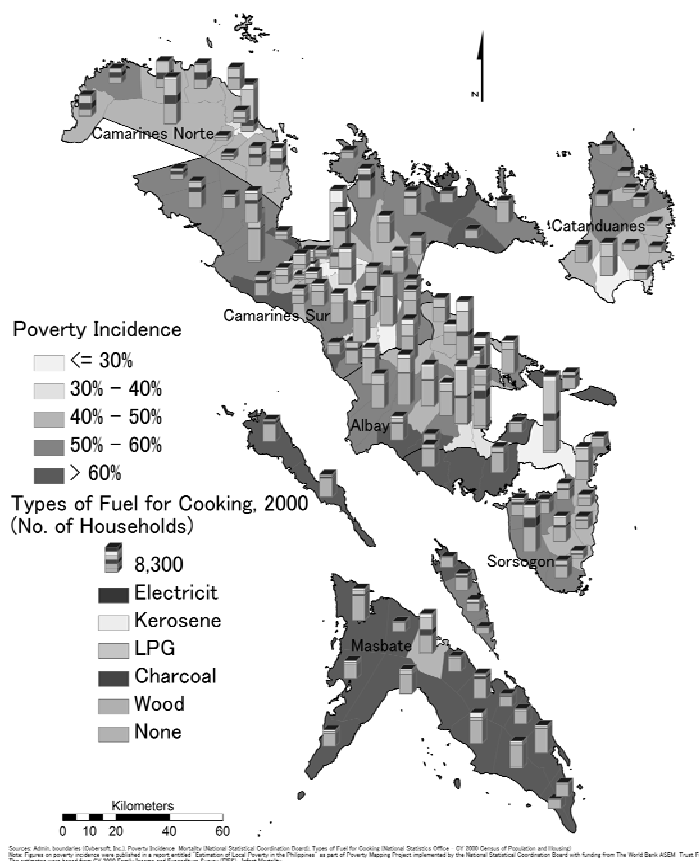
Poverty and Source of Fuel for Lightning in Bicol Region



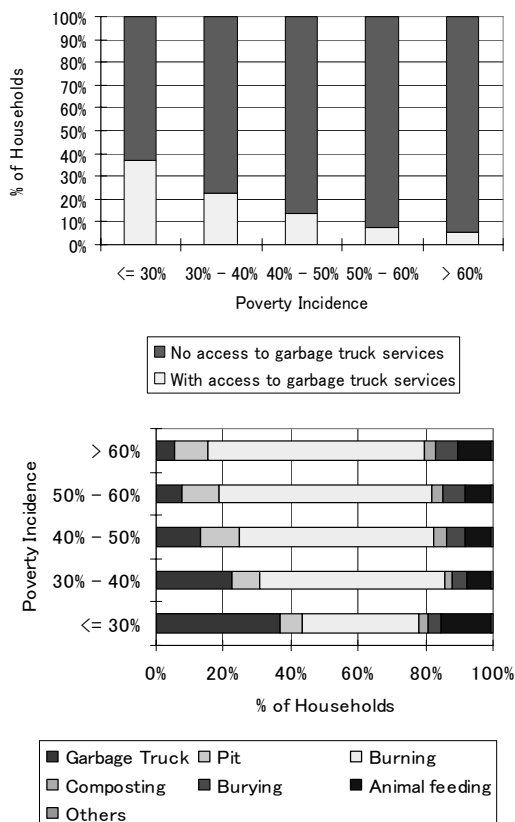
Poverty and Access to Fuel for cooking



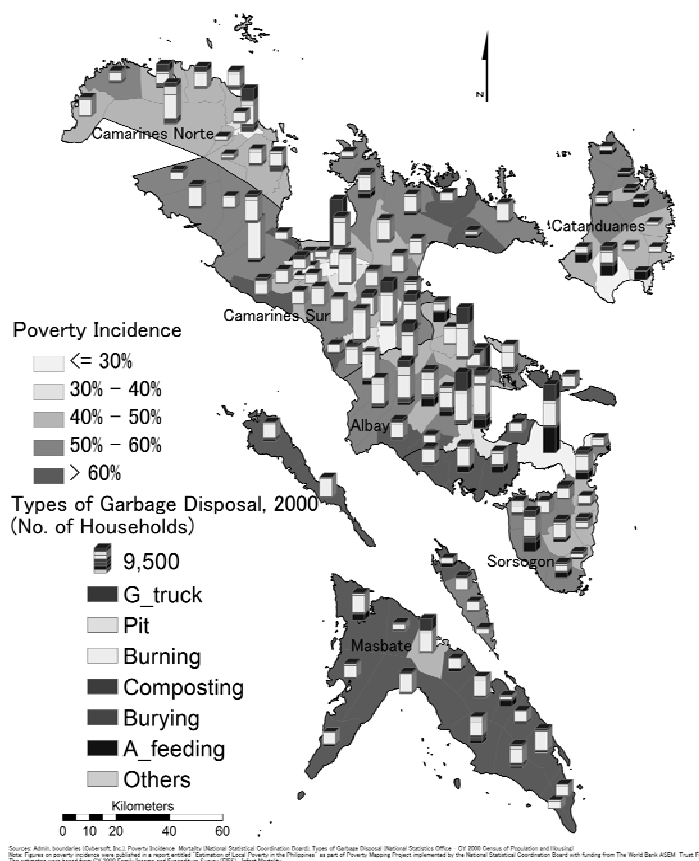
Poverty and Types of Fuel for Cooking in Bicol Region



Poverty and Garbage Disposal



Poverty and Types of Garbage Disposal in Bicol Region



Correlation:

Poverty Incidence vs. various indicators of well-being

	Poverty Incidence	Sig. (2-tailed)
Population Density	-0.5034**	0.0000
Dependency	0.7766**	0.0000
Immortality Rate	0.1304	0.1746
Birthweightless than 2.5 kg.	0.0442	0.6495
Underweight Children	0.4833 **	0.0000
Non-survival rate among Primary Students	0.5679 **	0.0000

* Correlation is significant at the 0.01 level (2-tailed)

** Correlation is significant at the 0.05 level (2-tailed)

Correlation:

Poverty Incidence vs. various indicators of well-being

	Poverty Incidence	Sig. (2-tailed)
Agrarian Reform	-0.2389 *	0.0105
Water sources for Drinking/Cooking	0.5877 **	0.0000
Water sources for Washing/Bathing	0.2212 *	0.0180
Fuel sources for lightning	0.8068**	0.0000
Fuel sources for cooking	0.8132 **	0.0000
Garbage Disposal	0.4291*	0.0000

* Correlation is significant at the 0.01 level (2-tailed)

** Correlation is significant at the 0.05 level (2-tailed)



Thank you

Questions, comments, suggestions,
please....

Spatial patterns of a co-diagnosis system in Korea: A case study between a general hospital and other nationwide medical institutions

Soo-Kyung Park

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Abstract

A co-diagnosis system, which is a kind of health care delivery, has been operated since 1989 and aims at preventing concentration of patients in some general hospitals and attaining a balanced development among medical institutions. Related research achievements of health care delivery up to the present have tend to center around the question of Western cases, the field of research on the East, including a case of Korea, is relatively young. So this paper attempted to examine spatial characteristics or patterns of health care delivery in Korea through a case of A general hospital and describe reasons why health care delivery in Korea dose not correspond with ideal model. To analyze spatial patterns of a co-diagnosis system in the present, author chose a case of A general hospital that is located in Seoul and has great influence on medical services on Korea. Data on A general hospital and related medical facilities, which are referring their patients to A general hospital and are performing their functions as subordinate medical facilities of A general hospital, was used as primary data. The total number of used data is 4,805 and is composed by followings; general hospitals 72 (1.5%), hospitals 262 (5.5%), clinics 4,464 (92.9%) and etc (for example, military hospitals). 7 (0.1%). The number of used data forms 10 percent of all medical institutions in Korea. This article was presented by three steps. 1) clarifying the tendency of a co-diagnosis relationship using ArcGIS 2) exploring another co-diagnosis relationship of subordinate medical institutions with data that were made by comparison with data of 55 general hospitals each other 3) examining reasons of spatial characteristics on health care delivery in Korea through quantitative and qualitative approaches.

Even though there are a lot of previous research achievements to reveal optimal range of health care delivery using models, so far, no definitive answer has been given to the question of real mechanism. So what I try to do in this paper is to address this approach and it is originality of this article.

According to previous research achievements, the ideal model of health care delivery is close to Christaller's central place theory, to be extract, primary medical institutions (clinics or hospitals) depend on general hospitals located in same region and the basic formation of health care delivery makes it a rule to be followed by hierarchy structure. But a case of Korea is different from previous research achievements. Basically, the number of co-diagnosis cases is reflected in distance decay, but most of the primary medical institutions, especially local clinics and hospitals refer their patients to A general hospital without passing local or near general hospitals.

- In addition, this tendency is clearer through primary medical institutions that are located in periphery not urban. In addition, local primary medical institutions have another co-diagnosis relationship with general hospitals located in the Metropolitan area not local general hospitals.
- Main reasons of these results are caused by 1) opinions of patients who want to consult a doctor in good general hospitals 2) a realistic and well-articulated marketing strategy of A general hospital 3)

Spatial patterns of a co-diagnosis system in Korea; A case study between A general hospital and other nationwide medical institutions

University of Tsukuba
Life and Environmental Sciences
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D 1, Soo Kyung Park

Introduction

- The major interesting of scholars, which are called by medical geographers, can be divided into two parts; the ecological approach to the spatial distribution of disease (for example, HIV/AIDS, cancer, leukemia etc. relating to environmental problems) and the spatial analysis of health behavior and planning, including health care delivery.
- Especially, health care delivery has been important role in medical geography from 1970s and the use of geographical applications in planning for health care delivery is considerable.

Purpose of this research

- A co-diagnosis system, which is a kind of health care delivery, has been operated since 1989 and aims at preventing concentration of patients in some general hospitals and attaining a balanced development among medical institutions. Related research achievements of health care delivery up to the present have tend to center around the question of Western cases, the field of research on the East, including a case of Korea, is relatively young.
 - So this paper attempted to examine spatial characteristics or patterns of health care delivery in Korea through a case of A general hospital and describe reasons why health care delivery in Korea dose not correspond with a ideal model.
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Research Methods

- To analyze spatial patterns of a co-diagnosis system in the present, author chose a case of A general hospital that is located in Seoul and has great influence on medical services on Korea. Data on A general hospital and related medical facilities, which are referring their patients to A general hospital and are performing their functions as subordinate medical facilities of A general hospital, was used as primary data.
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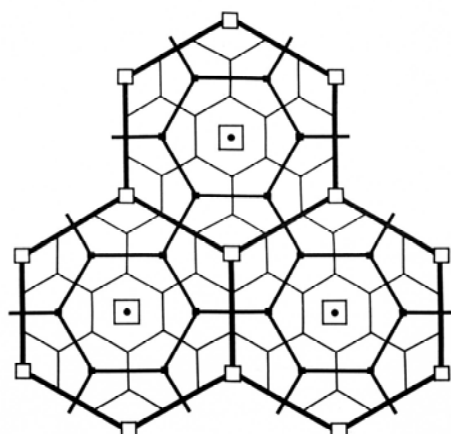
Research Methods

- The total number of used data is 4,805 and is composed by followings; general hospitals 72 (1.5%), hospitals 262 (5.5%), clinics 4,464 (92.9%) and etc (for example, military hospitals). 7 (0.1%). The number of used data forms 10 percent of all medical institutions in Korea.
 - This article was presented by three steps. 1) clarifying the tendency of a co-diagnosis relationship using ArcGIS 2) exploring another co-diagnosis relationship of subordinate medical institutions with data that were made by comparison with data of 55 general hospitals each other 3) examining reasons of spatial characteristics on health care delivery in Korea through quantitative and qualitative approaches.
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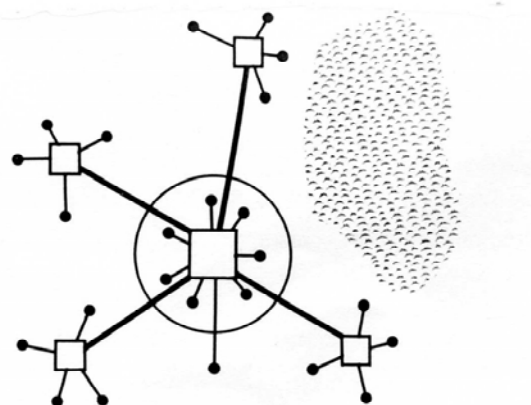
Background

- To solve the problem of health care delivery within the conflict between equity and effective, there are a lot of trials but “Christaller’s central place theory” has been the main current in health care delivery (Shannon, 1974).
 - So when a lot of countries established the policy of health care delivery, Christaller’s central place theory was applied to the borders. But there is a difference to apply to a realistic health care delivery model because of many irregularities in the region, so practical application of health care delivery is just like following figure.
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Background



- ◻ REGIONAL HOSPITAL (>500 beds)
- ◻ DISTRICT HOSPITAL (101-500 beds)
- RURAL HOSPITAL (20-100 beds)

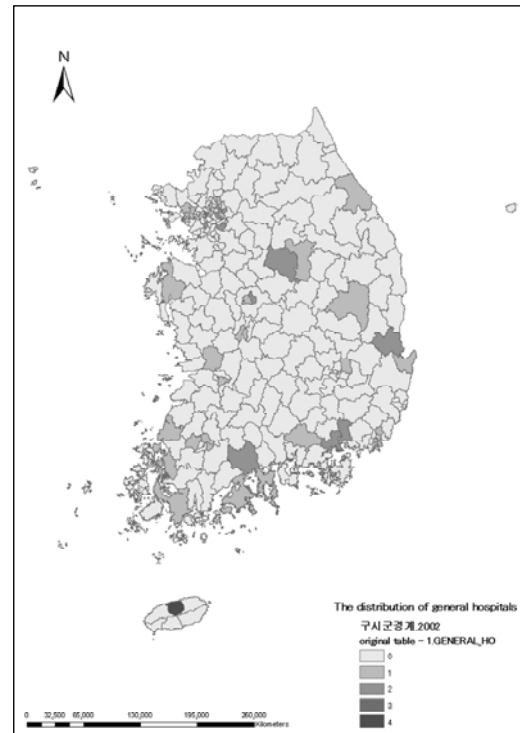
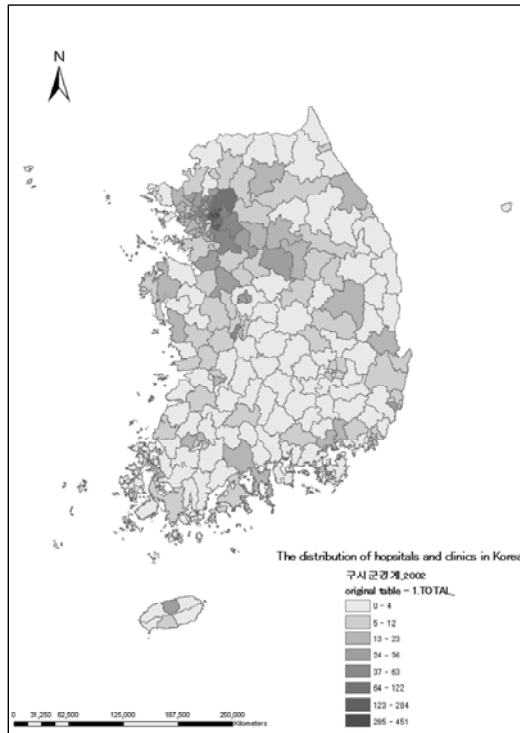


- ◻ REGIONAL HOSPITAL (>500 beds)
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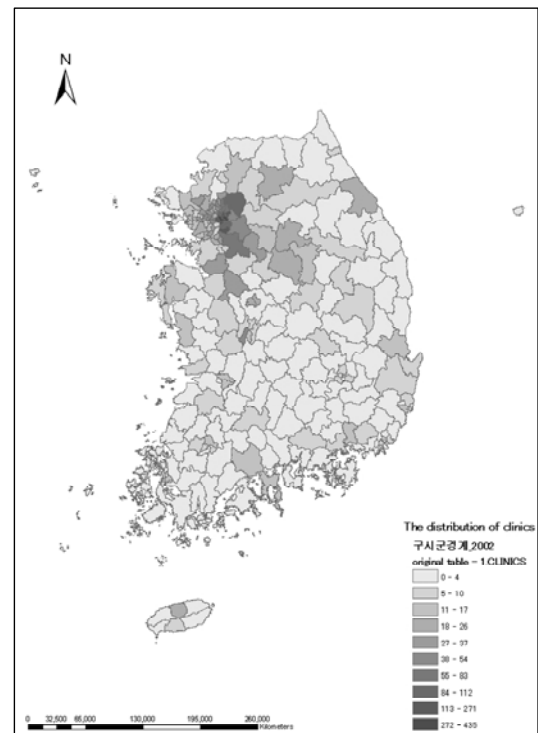
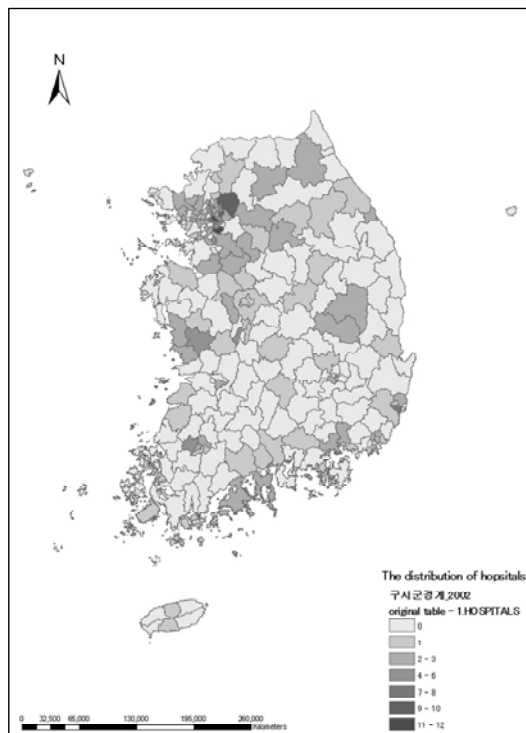
Results - 1

	General Hospitals	2 nd G.H	3 rd G.H	Hospitals	Clinics	Etc.
The Metropolitan Area	29 (40.3)	24 (36.9)	5 (74.1)	157 (59.9)	3,598 (80.6)	3 (42.9)
Urban	23 (31.9)	19 (29.2)	4 (57.1)	79 (30.2)	2,370 (53.1)	1 (14.3)
Periphery	6 (8.3)	5 (7.7)	1 (14.3)	78 (29.8)	1,228 (27.5)	2 (28.6)
The Middle Area	9 (12.5)	8 (12.3)	1 (14.3)	27 (10.3)	302 (6.8)	1 (14.3)
Urban	2 (2.8)	1 (1.5)	1 (14.3)	6 (2.3)	80 (1.8)	1 (14.3)
Periphery	7 (9.7)	7 (10.8)	0 (0.0)	21 (8.0)	222 (5.0)	0 (0.0)
The Western Area	15 (20.8)	14 (21.5)	1 (14.3)	24 (9.2)	175 (3.9)	0 (0.0)
Urban	3 (4.2)	2 (3.1)	1 (14.3)	10 (3.8)	45 (1.0)	0 (0.0)
Periphery	12 (16.7)	12 (18.5)	0 (0.0)	14 (5.3)	130 (2.9)	0 (0.0)
The Eastern Area	14 (19.4)	14 (21.5)	0 (0.0)	41 (15.6)	257 (5.8)	1 (14.3)
Urban	5 (6.9)	5 (7.7)	0 (0.0)	24 (9.2)	119 (2.7)	0 (0.0)
Periphery	9 (12.5)	9 (13.8)	0 (0.0)	17 (6.5)	138 (3.1)	1 (14.3)
Etc.	5 (6.9)	5 (7.7)	0 (0.0)	13 (5.0)	132 (3.0)	2 (28.6)
Urban	– (0.0)	– (0.0)	– (0.0)	– (0.0)	– (0.0)	– (0.0)
Periphery	5 (6.9)	5 (7.7)	0 (0.0)	13 (5.0)	132 (3.0)	2 (28.6)
Total	72 (100.0)	65 (100.0)	7 (100.0)	262 (100.0)	262 (100.0)	4464 (100.0)

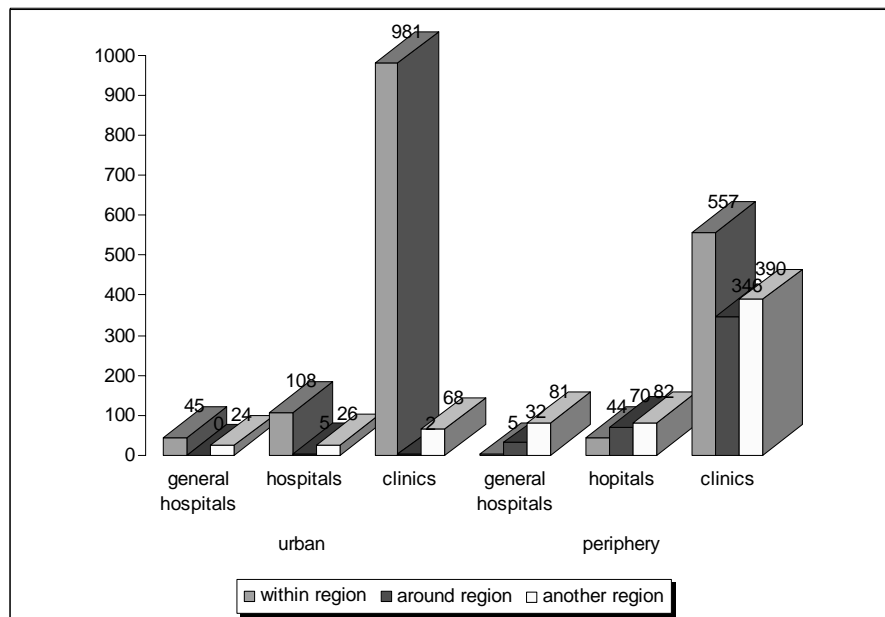
Results - 2



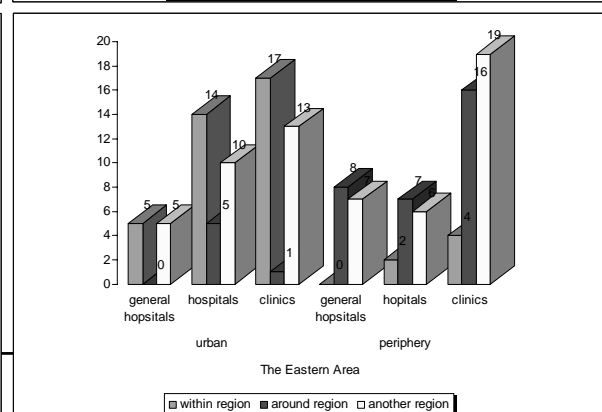
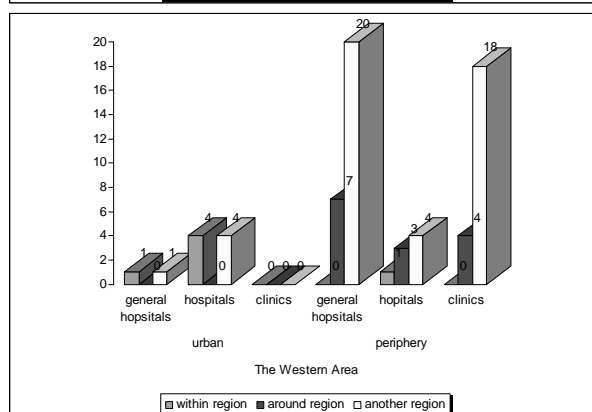
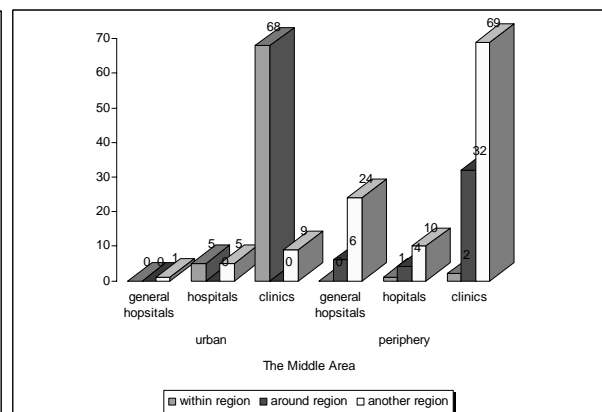
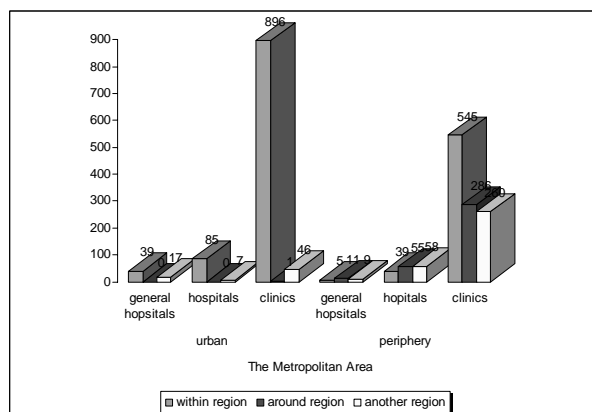
Results - 2



Result - 3



Result - 3



concentration of good medical institutions in Seoul 4) increasing of advertising impact.

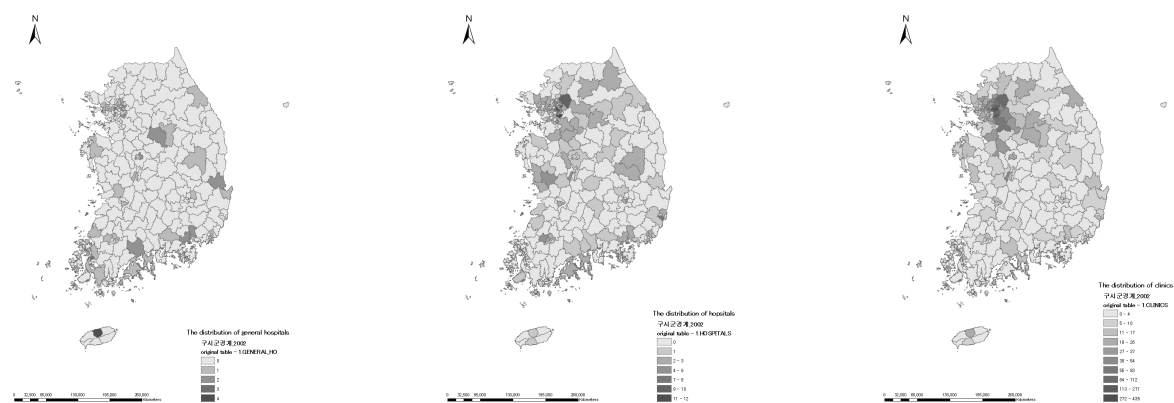


Figure 1 Distribution of medical institutions that have a co-diagnosis relationship with a general hospital (left: general hospitals, middle: hospitals, right: clinics)

GISを用いた火山防災に関する研究 ハザードマップの作成と地域防災計画への提言を通じて

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(1) 研究目的

火山災害は高速で流下する火砕流、広域に降下する火山灰などが同時に発生する。こうした災害の発生を正確に予測し、その危険を回避するには、行政や住民がその火山で起こる噴火災害についての情報を正確に把握していなければならない。そのためには、ハザードマップが有効とされ、各火山で整備が進められている。

火山ハザードマップ作成における最大の問題点は、次におこる噴火の規模や様式を予め知ることが困難なことである。既存のハザードマップの噴火想定方法には長所と短所を抱えている。これに対して、GISを用いてハザードマップを作成する場合には、複数の噴火想定を比較しながら被災地域を検討することができるため、より精度の高い推定ができる。また、これまでのハザードマップは、災害の範囲を示すだけにとどまり、人文的事象やそれらに対する被害の量を算出したものではないが、GISを用いることによって、社会情報をも地図化することができる。

(2) 研究方法

GISで扱う空間情報(火山情報・人文社会情報)をより多く且つ精度を改善した火山防災データベース(以下DBと略記)システムを構築する。防災に関する情報を効率的に管理・運用できるシステム兼ハザードマップとして有用であると考え、多くの情報を持っているためマップではなくシステムと呼称する。それに先んじて、紙媒体と電子媒体のそれぞれの短所長所を検討した上で、ハザードマップに盛り込むべき情報を吟味する必要がある。

DBで扱う情報の中には、空間解像度の高く、最新の地上の状況を把握できる衛星画像(例えばALOS, ASTERなど)を新たに取り入れる。また、既に公表されている火山防災DBも存在するが、人文的事象や具体的な非難計画・防災計画等への応用性に乏しいと考える。そこで、人文的データも、より詳細な人口分布や様々な属性(災害弱者、経済的価値など)を考慮したデータをレイヤとして重ねる。さらに、管理されたデータを解析し(例えば避難経路のネットワーク分析など)、詳細で具体的な危険度評価など解析結果も加えていく。

この火山防災DBをWebで公開できる形で提案する。多くの情報からなるため、紙媒体での公刊はできない。一方、現在でも既にWeb上でハザードマップや災害DBは見受けられるが、単純な画像表示のみにとどまったり、具体的な活用方法がわかりにくいなどの課題を有している。本研究で作成する火山防災DBは既存の問題点を受けて、表示方法、活用方法なども配慮したものを考えている。

さらにその新たなハザードマップの有効性・期待度の検証として、火山麓の自治体の住民や防災担当者を対象にアンケートを実施する。

対象火山は修論に引続き、妙高火山とする。妙高火山周辺のデジタル化されたデータは他の活動的火山と比べて少ない。そのため、本研究で作成された手法を他の火山(注2)でも応用しうることを示すことができる。

(3) 期待される意義

- 火山災害の減災に不可欠な火山及び山麓に関する基礎情報・防災情報を一元的に取り扱うハザードマップ兼DBの新たなテストケースを提案。
- 衛星データや解析結果といった空間情報技術を既存のハザードマップやDBに取り入れることで、防災効果向上を狙うとともに、空間情報技術の防災分野における新たな応用例を示す。
- 火山防災DBの整備及び利活用のモデルとして他の火山へ波及

A construction of test bed for spatially integrated online surveying system: A case study in Tsukuba City

Ko Ko Lwin

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Abstract

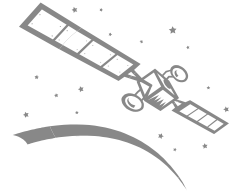
The gathering of public opinion and their spatially associated information is an important and critical task for city and local government agencies, in order to assess human resources, regional development planning, decision-making process and public facility management. Most local government decision-making processes require spatial distribution patterns of population and their associated attributes information, especially in disaster management and emergency preparedness. Collaboration between residents and the local government is a key factor for effective administration process and regional development planning. Current public surveying systems (either online or regular mail or telephoning) merely collect information and additionally skilled persons are required to convert these data into GIS (Geographical Information Systems), in order to visualize and analyze for decision making process. Here we are implementing a centralized geo-database for Spatially Integrated Online Surveying System (SIOSS), which enables to collect, integrate, analyze and visualize public survey data with their spatially associated attribute information for local and city government decision making process in a timely and cost effective way, under the collaborative GIS scenario.

Keywords: SIOSS, spatially integrated online surveying system, GIS for city and local government, collaborative GIS.

2 INTRODUCTION

This study is focused on two aspects.

1. Spatial Information Science Aspect
2. Social Science Aspect



1. *Spatial Information Science Aspect*

Now a day, spatial information is widely used in various academic disciplines and various user levels (ranging from desktop expert users to mobile public users) due to the following reasons.

Rich of spatial information sources

Increasing number of Earth observation satellite launching (e.g. Earth observation satellites, Weather satellites, Environmental monitoring satellites, Commercial high resolution satellites, etc.). These data are one of the primary data sources for GIS analysis.

User friendly GIS

Advances in computing, networking and software development, now a day spatial information is in your hand. Such as Google Map, Microsoft Virtual Earth, etc.

GIS is more mobile

Recent innovation in computer hardware, wireless networking and Internet GIS (WebGIS) technologies enable GIS field users to collect, store and analyze spatial data by handy and mobility. Such as emergence of UMPC (Ultra Mobile PC).

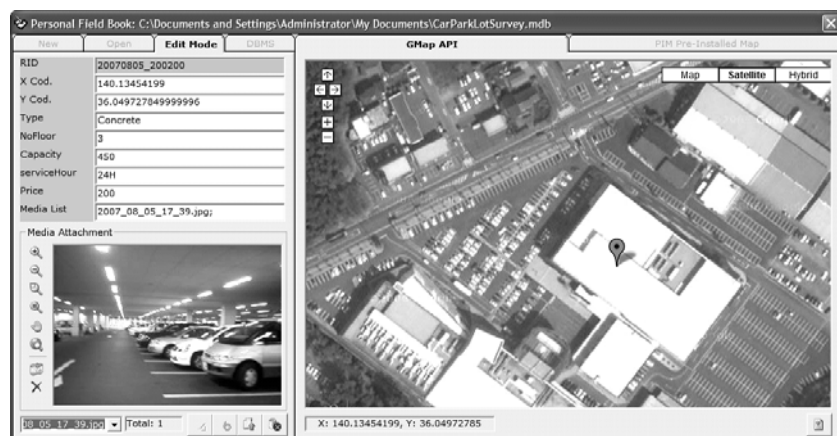
Example: UMFieldGIS “em field GIS” , a program developed for UMPC computer for Urban area field data collection by embedded Google Map API.



Survey Form
(Survey Items)

Media Attachment

Innovation in computer hardware, wireless networking and WebGIS



Social Science Aspect

GIS applications in social sector is now increasing due to user friendly GIS and increasing numbers of home internet users.

Last decade, social scientists are most dealing with non-spatial data (such as tabular data, statistical data, graphs, charts, etc).

But now the situation is changing. They considered GIS as a best tool for effective visualization of their non-spatial information.

By using GIS, people can easily aware what kind of crime recently occurred in where?
what diseases are recently dispersed in where? where population are distributed by age, by sex, by income? etc.

By utilizing all advances in spatial information science that apply to human society and improve decision making process which related to daily social activities is major interesting of this study.

3 PROBLEM STATEMENT

Gathering of public opinions and their spatially associated information is critical task for city and local government. It requires considerable time and money.

This information is require for ~

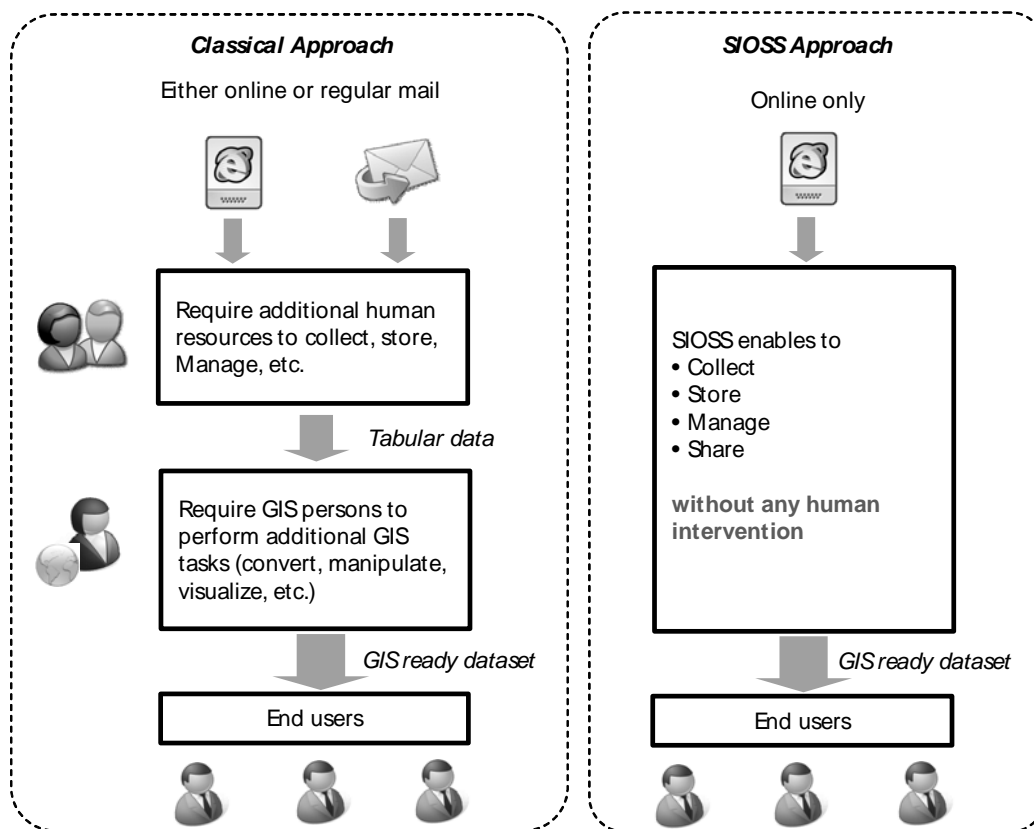
- *Human resources assessment,*
- *Regional development planning,*
- *Public facility management,*
- *Decision making process,*
- *Disaster and emergency preparedness*
- *Others.*

Collaboration between government and citizens is key factor for successive decision making process.

Current public surveying system (either online or off-line) merely collect non spatial information.

Require additional skilled persons to handle collected data (data collecting, entering, processing and manipulation, etc.)

Require additional skilled GIS persons to convert those data into GIS systems in order to perform additional decision making process.



Comparison of classical approach and SIOSS approach

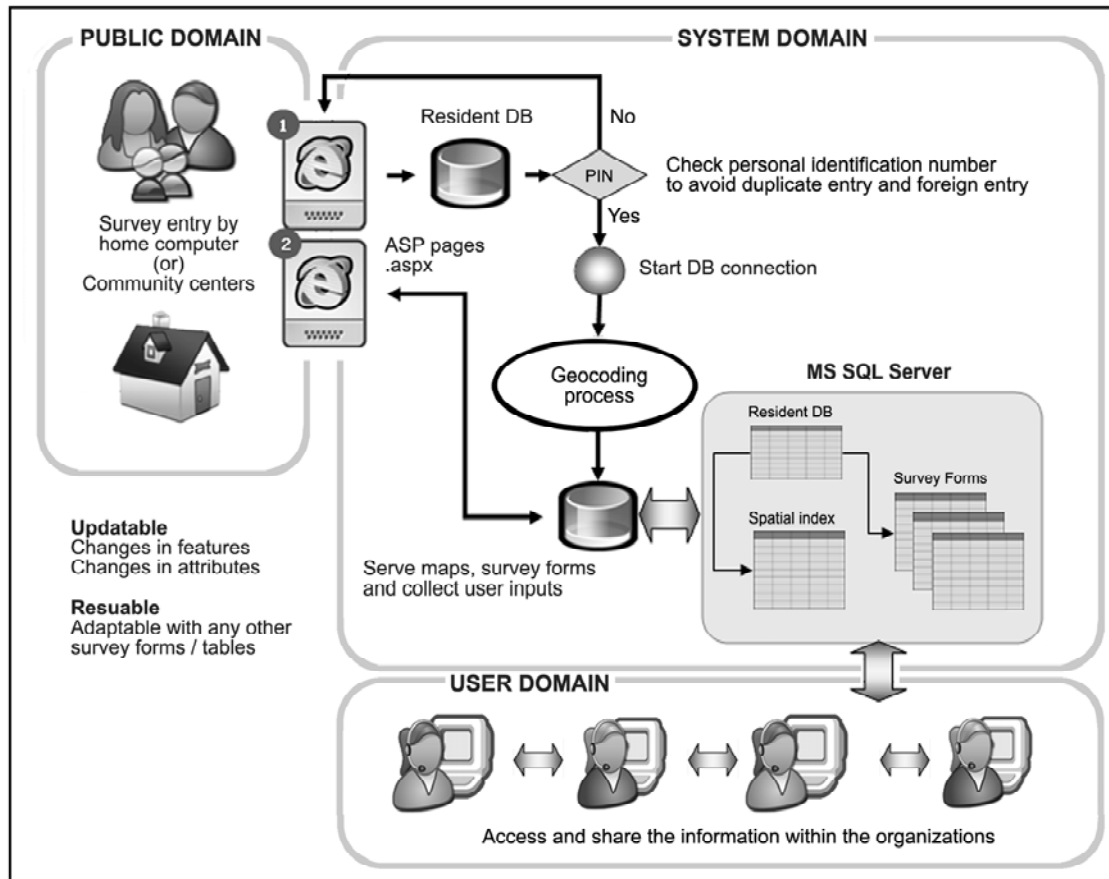
4 RESEARCH OBJECTIVE

The purpose of this study is to construct a Test Bed of centralized geo-database for Spatially Integrated Online Surveying System (SIOSS), which enables to collect, integrate, analyze and visualize public survey data with their spatially associated attribute information for local and city government decision making process in a timely and cost effective way.

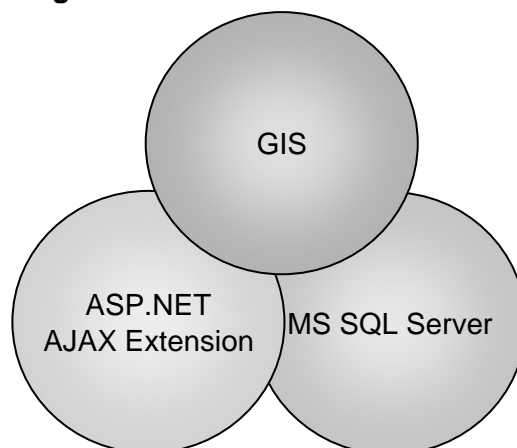
Test bed: A platform or small system which includes hardware, software and management for experimental purposes.

5 METHODOLOGY

Conceptual Design of SIOSS



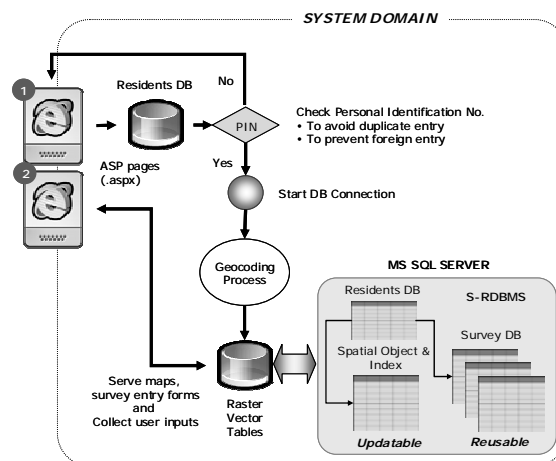
Three Core Technologies



GIS: Geographical Information Systems
 ASP.NET: Microsoft Active Server Page
 AJAX: Asynchronous JavaScript and XML
 MS SQL: Microsoft Structured Query Language

6 EXPECTED OUTCOME

The expected outcome is a **Web-enabled Spatial Database Model** of public surveyed data that can be fully **functional and integrate into current GIS system** which information can be **share and retrieve** within the city and local decision makers.

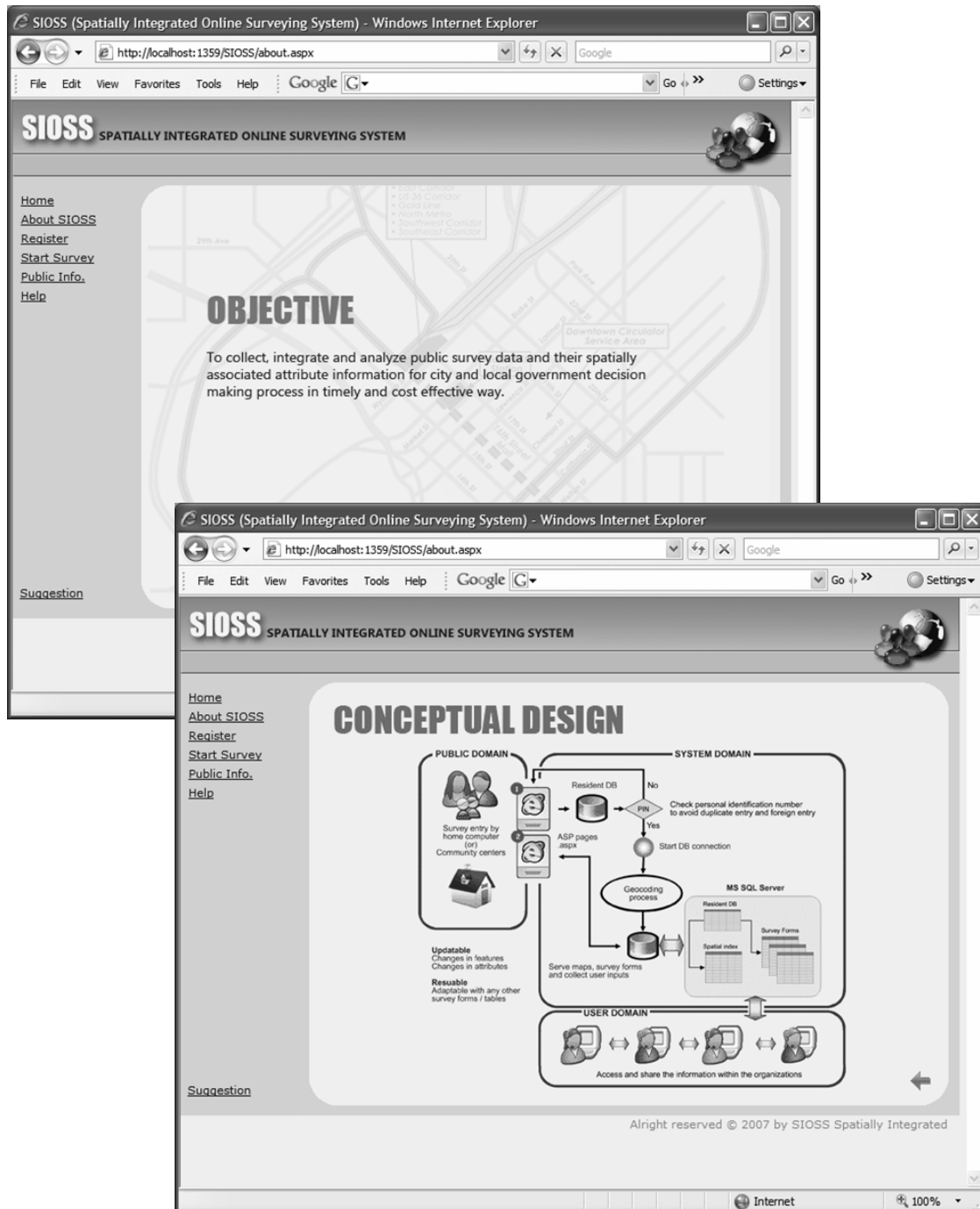


7 RESEARCH PROJECT PLAN

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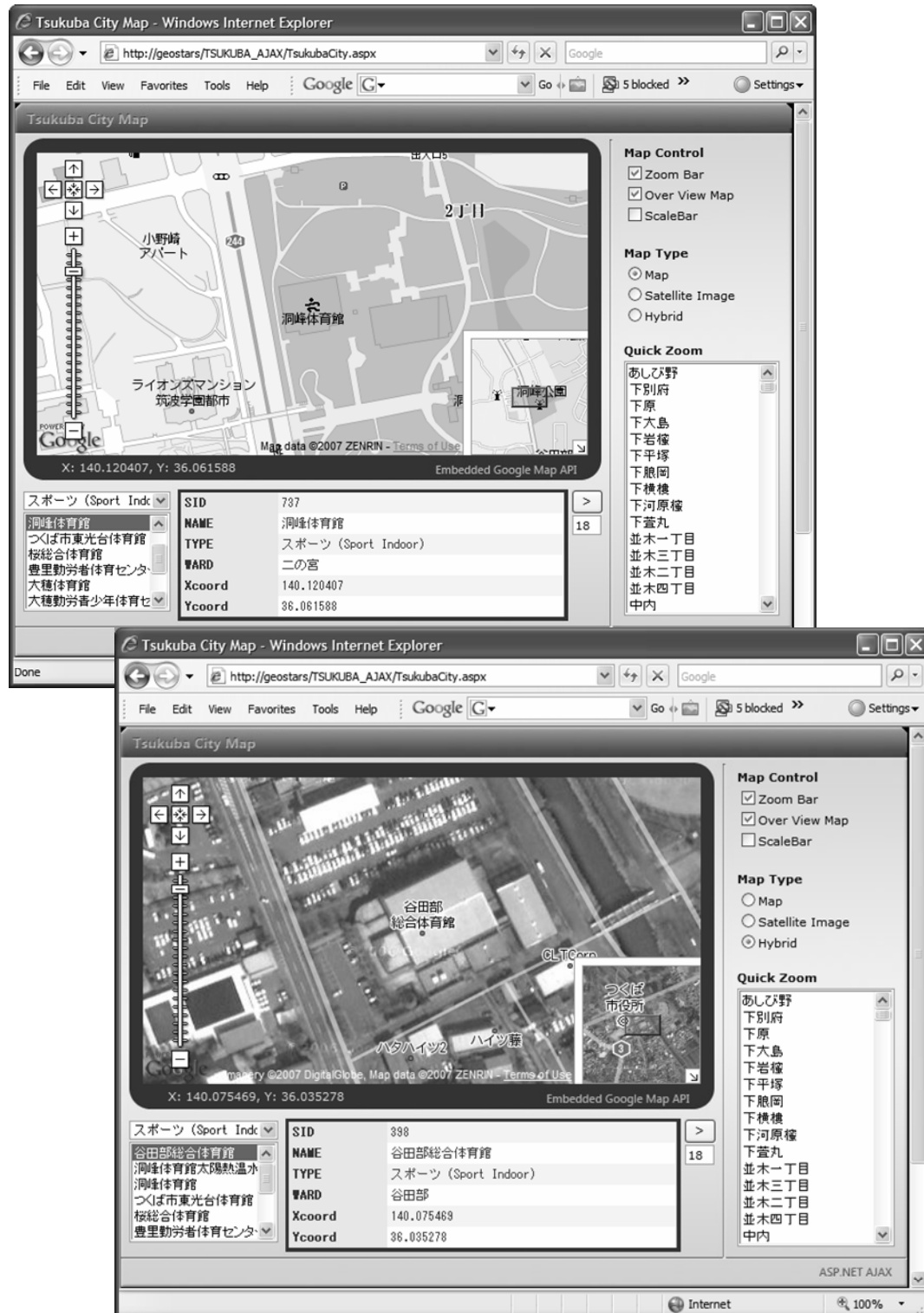
8 PROGRESS STATUS

Establishment of ASP.NET Web Server and Configuration



ASP.NET AJAX Extension Test

ASP.NET AJAX Web page test based on Google Map API



Perspective on forecast of Tsukuba City using integrated land-use and transportation model

Chiaki Mizutani

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Abstract

Since Japanese Cabinet decided to establish Tsukuba Science City in 1963, Tsukuba city has been facing the impact of the government. In 1985 Jo-ban expressway started before opening TSUKUBA EXPO. In 2005, Tsukuba Express: new rail line connected to Akihabara, Tokyo has just opened. There are events occurring land use change, structure of population and industry. All the events were planned by government. Government considered about land-use and transportation because there is interactive relation between land-use and transportation. There are a lot of factors related land-use change and structure of people. The purpose of this study is to forecast the future of Tsukuba city to consider the impacts from land-use and transportation. To get the results the relations between those are disclose.

This abstract wants to address the methodology to forecast the impact of planning considering both land-use and transportation. There are integrated land-use and transportation models to forecast the nearly future. MEPLAN is one of the most powerful tools to forecast. MEPLAN was developed by Marcial Echenique and Partners (ME&P) in 1980's at University of Cambridge. The land-use model of MEPLAN estimated allots of population, house hold, industry labors and service attendant to zone by zone. From the population distribution of each zone the transportation model converts the flow of people to cost of transportation. Calculated cost of transportation for each flow extracts the "dis-utility budget" and "cost of life". MEPLAN seems income is divided to payment for residence, transportation and other.

Using MEPLAN concept to forecast the impact of urban planning at Tsukuba city will adopt the grid statistics data which has population, household, industry and space of house cell by cell as input data. It will work well as an input data to MEPLAN calculating the value zone by zone. To apply MEPLAN to Tsukuba city area requires getting more detail data to forecast the impact of planning.

Keywords: Tsukuba, MEPLAN, grid statistics data.

つくば市における土地利用と交通との統合モデルを用いた将来予測

Forecast of Tsukuba city using integrated Land-use and Transportation model

July 21st, 2007

Chiaki Mizutani

1. 土地利用と交通の関係

Relation between Land-use and Transportation

- 土地利用と交通は、相互に作用しあうため「卵と鶏」の関係に例えられる。
There is a proverb which says “Eggs and Hen” , because there is interactive relation between Land-use and Transportation.
- 土地利用計画と交通計画は双方の影響を考慮しながら策定されることが多い。
Some plans are drawn up including the interactive consideration between Land-use and Transportation.

1. 土地利用と交通の関係

Relation between Land-use and Transportation

- Ex. つくばエクスプレス(TX)
研究学園都市駅周辺では、駅の開業に連動して商業施設や宅地開発が進められている。
Carrying out construction of retail shop and residential development and simultaneously opening new station.

土地利用と交通との一体計画

Integrated Land-use and Transportation Planning

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中共同研修所

2. 都市計画の意義

Significance of Urban Planning

- 土地利用や交通は、行政によって策定される都市計画に則り開発が進められる。
Development of Land-use and Transportation should be allowed to Urban planning drew up by Government.
- 都市計画の目的
乱開発の管理, 自然環境の保護, 政策の実現を補助すること
The purposes of Urban Planning are to control development, to keep natural environment and to fulfill the policy.

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2. 都市計画の意義

Significance of Urban Planning

- Ex. つくば市
- 研究学園都市としての機能
The role as a Science City
 - 1963.筑波研究学園都市の設立閣議決定
Cabinet decided to establish Tsukuba Science City
 - 1973 筑波大学開学
University of Tsukuba was established
 - 1985 筑波科学技術博覧会開催, 常磐道開通
TSUKUBA EXPO/ Joban Expressway
 - 2005 つくばエクスプレス開業
Started Tsukuba Express (TX)

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共同研修所

3. 計画の成果の予測

Forecast the Impact of Planning

- 計画完了時のまちの姿を予測するのは難しい.
It's difficult to forecast outcome of planning because there are a lot of factors carrying out development or decline.
- 土地利用と交通を統合的に予測するモデルの援用.
Integrated Land-use and Transportation Model helps to forecast the impact of Planning.

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3. 計画の成果の予測

Forecast the Impact of Planning

- 土地利用交通モデル: MEPLAN

- 機能: 政策に掲げられた人口や産業構造を対象地域内のゾーン毎への割り振りを行い, 計画期間終了時の状況を予測する.

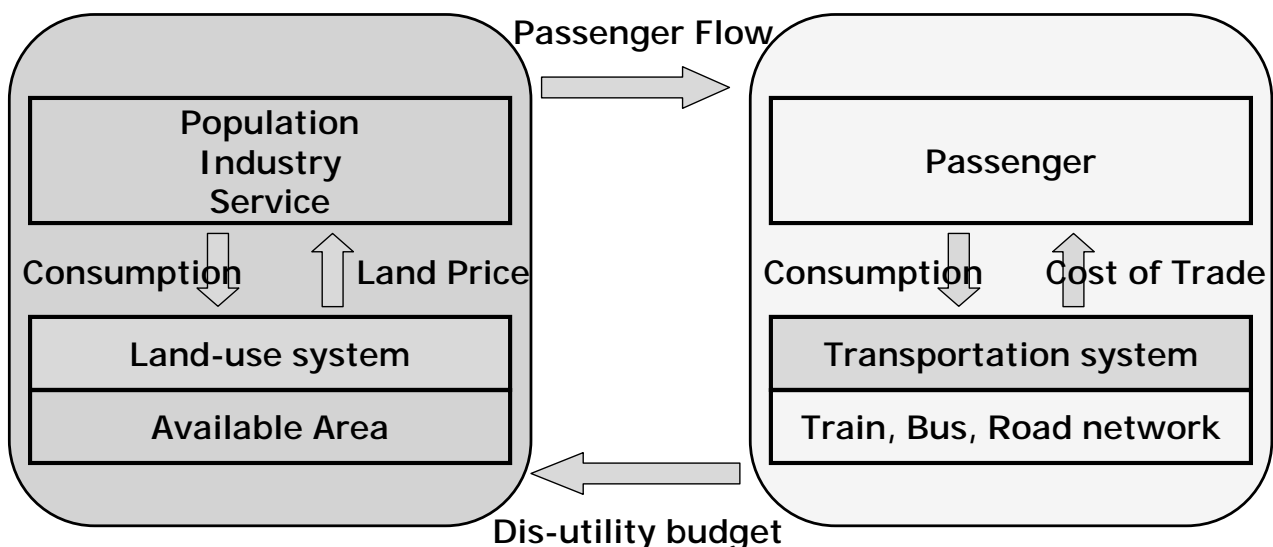
Function of MEPLAN: To allot population and industry labors to every zone inclusive planning area, and to forecast the impact of planning area at the end of the period.

- 歴史: Developed by Marcial Echenique and Partners (ME&P) 1980's at University of Cambridge.

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4. MEPLANのメカニズム

Mechanism of MEPLAN



4. MEPLANのメカニズム Mechanism of MEPLAN

- Land-useモデル

$$T_{li} = Consum_i \cdot \frac{S_i \cdot \exp\{-\lambda(C_i + d_i - w_i)\}}{\sum_{i=0}^N S_i \cdot \exp\{-\lambda(C_i + d_i - w_i)\}}$$

T_{li} : Alloted Trade of zone_i
 $Consum_i$: Consumption of zone_i
 S_i : Available Area
 λ : coefficient
 C_i : Cost of life
 d_i : Dis-Utility budget
 w_i : attractor

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4. MEPLANのメカニズム Mechanism of MEPLAN

- Transportationモデル

$$F_{ijk} = F_{ij} \cdot \frac{\exp(-\lambda d_{ijk})}{\sum_{k=0}^N \exp(-\lambda d_{ijk})}$$

F_{ijk} : Flow Flow z_i to z_j using mode k

d_{ijk} : Cost of Transportation

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5.入手可能なデータ

Available data

- For Land-use model
 - 地域メッシュ統計(国勢調査)
Grid statistics Data (Population)
 - 土地利用計画図
Urban Planning Map
- For Transportation model
 - 空間データ基盤25000
Road network
 - バス経路, 時刻表, 料金
Bus route, time schedule, price

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- ご清聴ありがとうございました

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Urban development and environmental consequences in Kathmandu valley, Nepal

Rajesh Bahadur Thapa

Email: thaparb@yahoo.com

Abstract

Urban development and changes in land-use patterns have various social and environmental impacts, including the loss of natural spaces, increased traffic congestion, lessen air quality, landscape fragmentation, alterations in river systems, and reduced water quality. Rapid urbanization has been observed in Nepal from 1970s onward, which is among the highest in Asia and the Pacific. The number of urban centers in Nepal grew from 10 to 58 between the year 1952 and 2001 where the urban population increased from 0.2 million to 3.2 million (14% of the country population). This paper discusses urban development process and emerging environmental consequences in Kathmandu valley.

A bowl shape valley ranks premier among the oldest human settlements in central Himalaya. With a history and culture dating back to 2000 years, the valley has evolved from lakebed to paddy agriculture to present day urban society. The agriculture landscape transformed dramatically, since the 1960s, into an urban form stretching across the valley, driven by the transportation and migration. The urban land in the valley grew from 5% in 1984 to 10% in 2000. Agriculture land decreased from 64 % to 41% in the same period. Large part of the valley floor transformed to the concrete structures for housing, industries and roads.

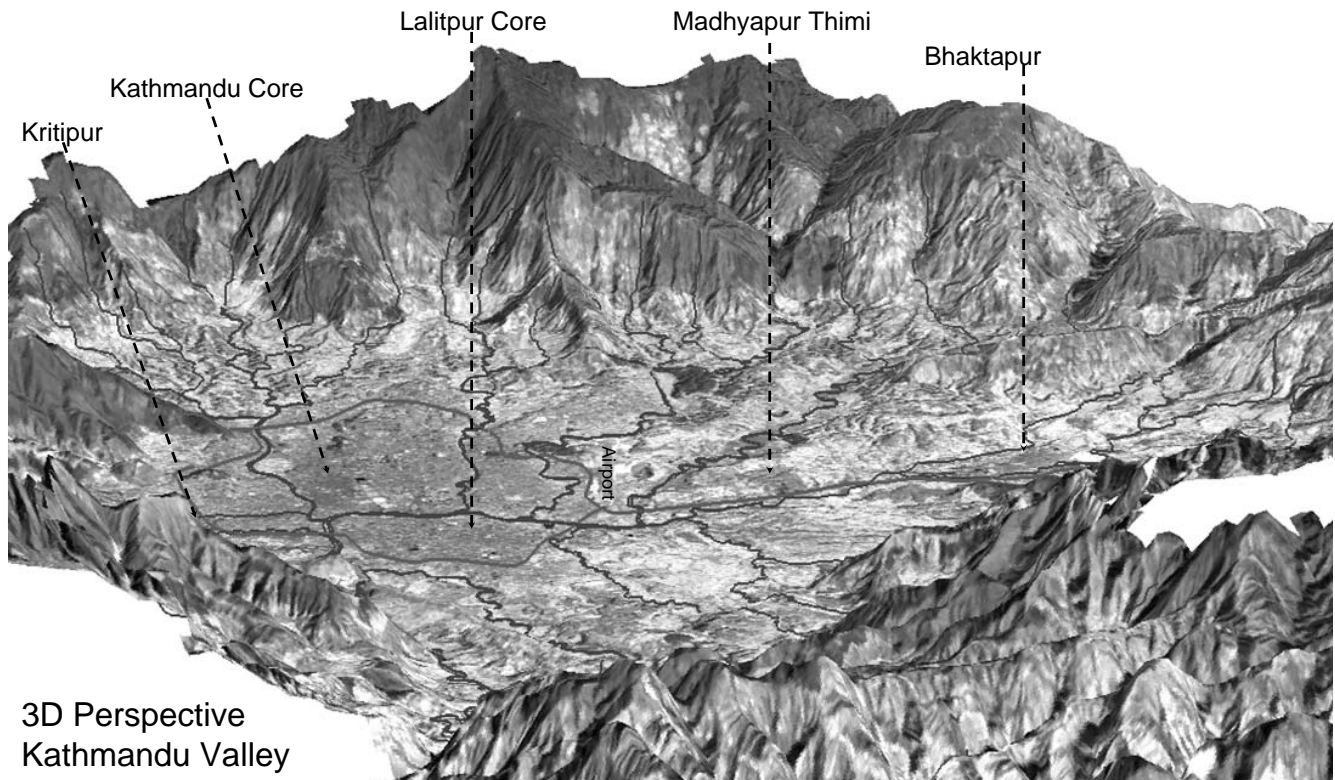
Kathmandu is the capital of Nepal and most populous metropolitan region in the country. With 919-km² geographic spaces, the valley accommodates 1.6 million inhabitants where 1 million lives in urban area. A large volume of the population (38.5%) migrated to the city from different parts of the country for different purposes mainly seeking education, services, institutional activities, and businesses. The urbanization rate of the valley (47%, 54% and 60% in the census year 1981, 1991 and 2001, respectively) is very high as compared to the country (i.e., 6%, 9% and 14% for the corresponding year respectively).

Rapid urbanization is a sign of economic prosperity of city. But certainly, it brings biophysical changes that will have a great impact in living environment. The valley has very limited land resources for new developments. Spatial growth of urban is too horizontal. Five decades passed with several urban development planning interventions in the valley but high population influx, untraced urban development and daunting urban environment are remained serious concerns in the city. Haphazard and unguided land change process plunged the valley into many environmental consequences such as inadequate housing, poor urban services, heavy traffics, and pollutions of air and water resources particularly in urban core.

However declining of manufacturing industries and emergence of new service industries in the valley could be a new hope for revitalizing the city environment. Basic urban services such as electricity, water and transportation required urgent attention from every human being in the valley. Employing vertical urban growth strategies through developing high-rise buildings may cope with limited land resources. Such approach may help to solve malpractices of land development and accommodate the growing population in the city although it is very challenging for the governing body of Kathmandu valley in current uncertain political resolution.

Keywords: urbanization, urban development, land use change, Kathmandu Valley.

Urban development and environmental consequences in Kathmandu valley, Nepal



By Rajesh Bahadur THAPA, SIS Seminar, Yamanaka, 21-22 July 2007

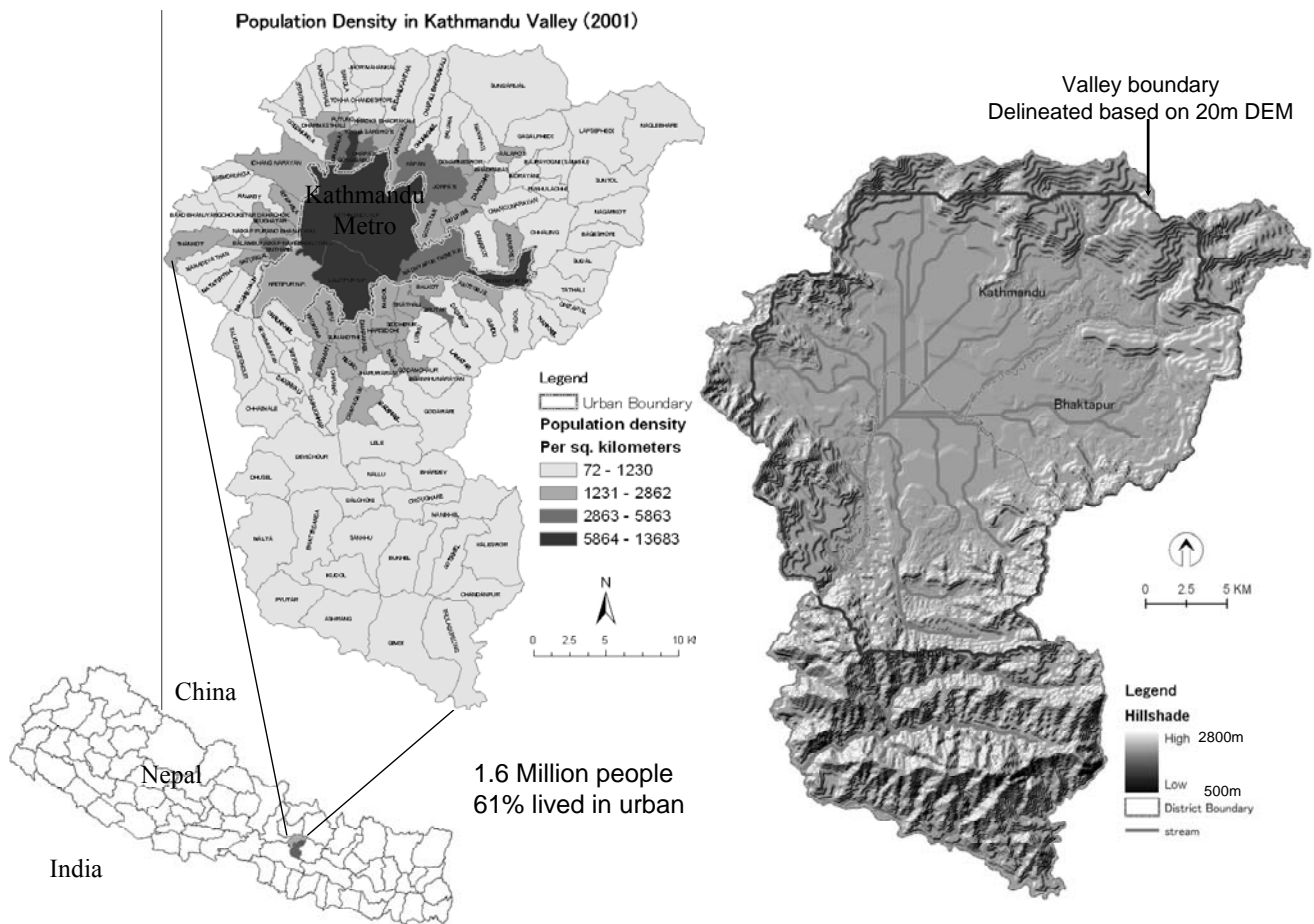
1. Challenges – broader vision

Urban development and changes in land-use patterns bring various environmental consequences, including the loss of natural spaces, increased traffic congestion, lessen air quality, landscape fragmentation, alterations in river systems, and reduced water quality.

Rapid urbanization has been observed in Nepal from 1970s onward. The number of urban centers in Nepal grew from 10 to 58 in the last 50 years similarly the urban population increased from 0.2 million to 3.2 million (14% of the country population) with the annual growth rate of 6.6%.

Business and employment opportunities, commercial and social interests, and decade long political conflict have increased the people movement from rural areas to cities in Nepal.

1. Challenges – an outlook of Kathmandu valley



2. Process of urban development – historical perspective

The formal settlement of Kathmandu Valley goes back to long before Christian Era

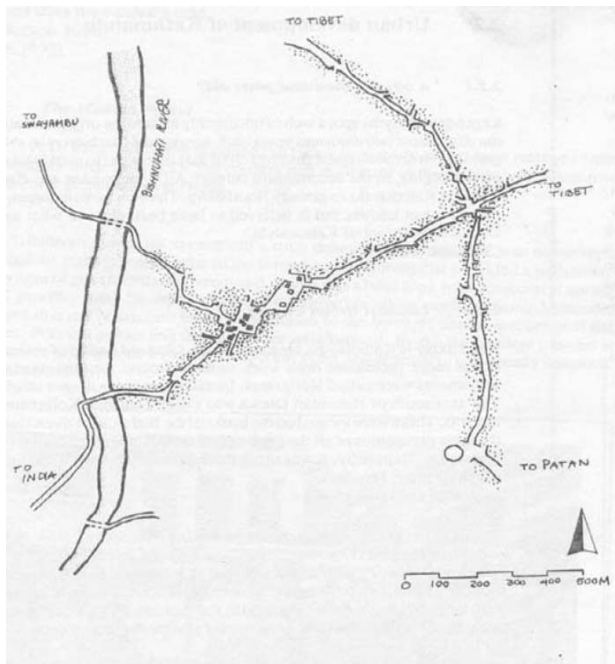
With a history and culture dating back to 2000 years, Kathmandu valley evolved many times from lakebed landscape to paddy agriculture to present day urban society.

Due to the trade function (Indo-Tibet trade route started in 7th century) Kathmandu had urban textures from the beginning

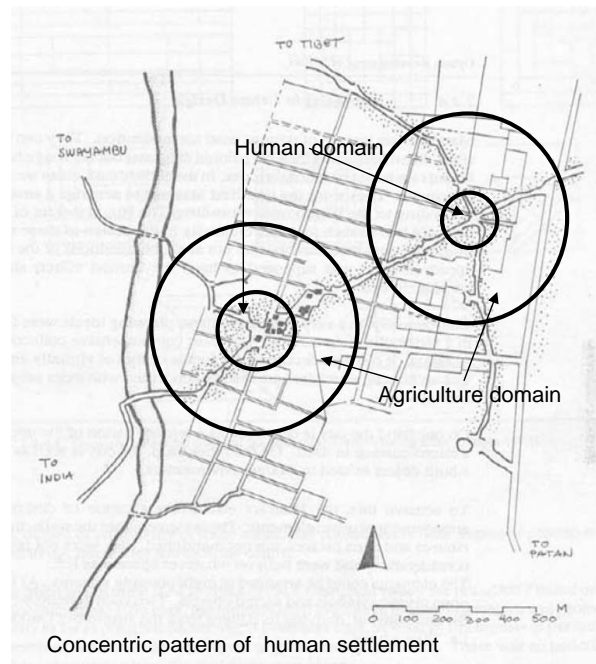
Kathmandu as urban center was formally established in 1143 during the reign of Lichchhavis

The settlements of Lichchhavis further expanded by Mallas superimposing grid pattern

2. Process of urban development – historical perspective



Settlement in early period



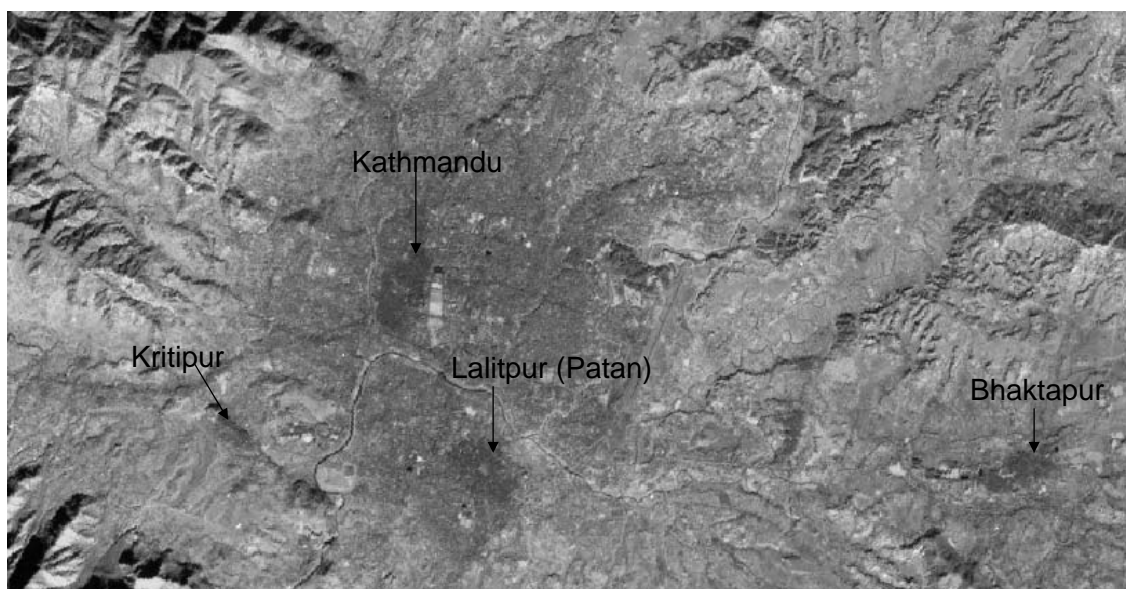
Superimposed by Malla reign

5

2. Process of urban development – historical perspective

Hierarchy of roads and open spaces were built in the settlements

Satellite towns like Kirtipur, Lalitpur, Bhaktapur were established serving auxiliary functions



6

2. Process of urban development – historical perspective

The later rulers (1769 – 1951) discontinued the resource management approach of Kathmandu settlement and built big palaces on the fertile soil in squatter way...starting of the encroachment of the fertile land



Before 1951, (Rana dynasty)

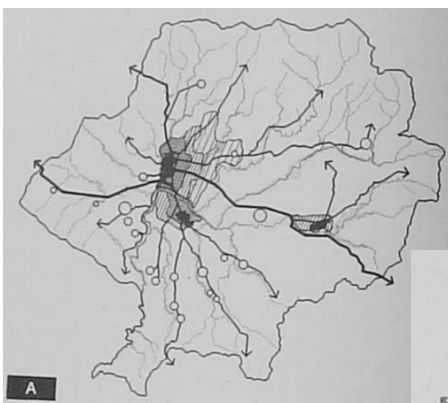


After 1951

7

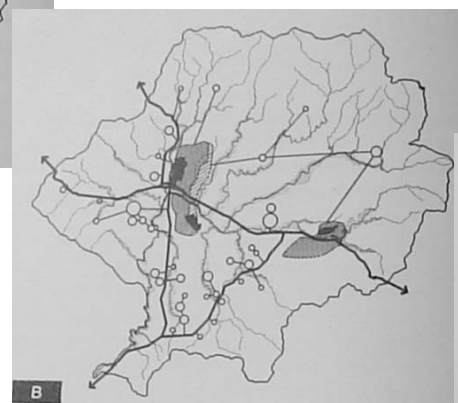
2. Process of urban development – planning intervention

1969 - Kathmandu Valley Physical Development Plan - alternative growth stages

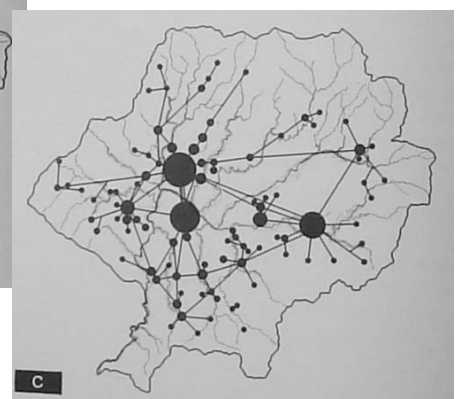


A. Continuation of present growth tendencies of Kathmandu-Patan complex

B. Bi-polar development with Bhadgaun with reinforcement of transport linkages



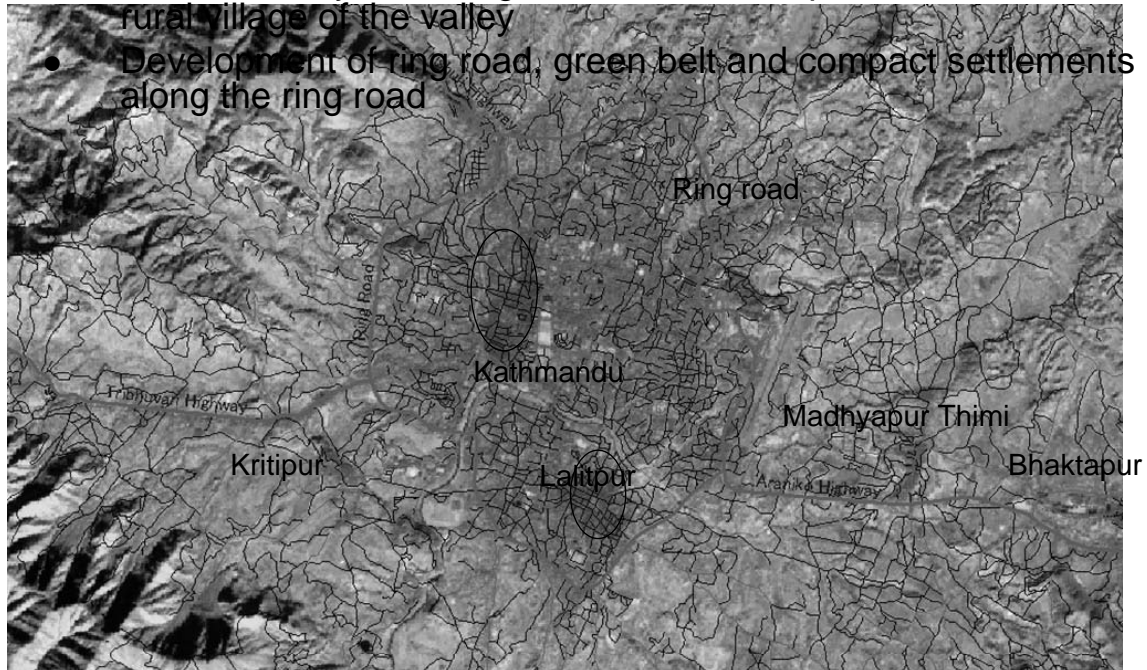
C. Multiple-nucleated regional growth with linkage of dispersed urban settlements



2. Process of urban development – planning intervention

1976 – The Kathmandu Valley Town Development Plan

- Designation of 3 broad zones as a form of spatial development concept: Zone A as city core (Kathmandu and Lalitpur (Patan)); Zone B as city core fringe; and Zone C as planned settlements in rural village of the valley
- Development of ring road, green belt and compact settlements along the ring road



2. Process of urban development – planning intervention

1984 – Kathmandu Valley Town Planning Team proposed KV Physical Development Concept

- Revision of Kathmandu Valley Town Development Plan – 1976
- Formation of Kathmandu valley town development team
- Development of planned settlements within the Greater Kathmandu
- Bhaktapur to be developed as a second principal settlement
- Places at the higher altitudes within the valley to be developed as a third settlement areas.

1991 – Kathmandu Valley Urban Development Plans and Programs

- Controlling urban growth through planned infrastructure
- Containment and densification policies
- Comprehensive studies on infrastructural needs and its direction

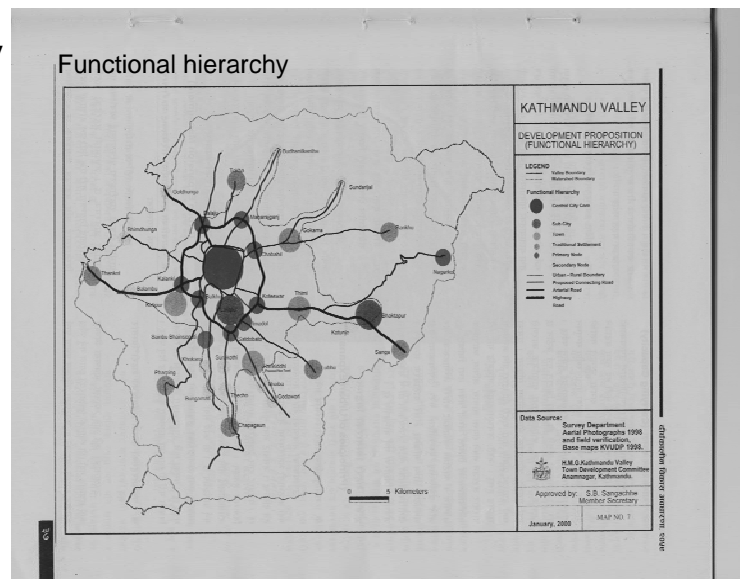
1999 – Environmental Planning and Management of the Kathmandu Valley

- Regulating the growth of Kathmandu – Law and Policies
- Looked into the problem from ecological side
- Environmental planning – limit to growth and growth regulation

2. Process of urban development – planning intervention

2002 – Long Term Development
Concept of Kathmandu Valley
2020

- Latest strategic development plan
- Valley-wide institution called Kathmandu Valley Urban Development Council under the Government of Nepal
- Reiterated the containment and densification policy
- Imaginary Urban-Rural boundary line drawn
- Land use and other development standards are proposed



11

3. Environmental consequences - landscape changed in 4 decades

Landmark – Boudhanath Temple

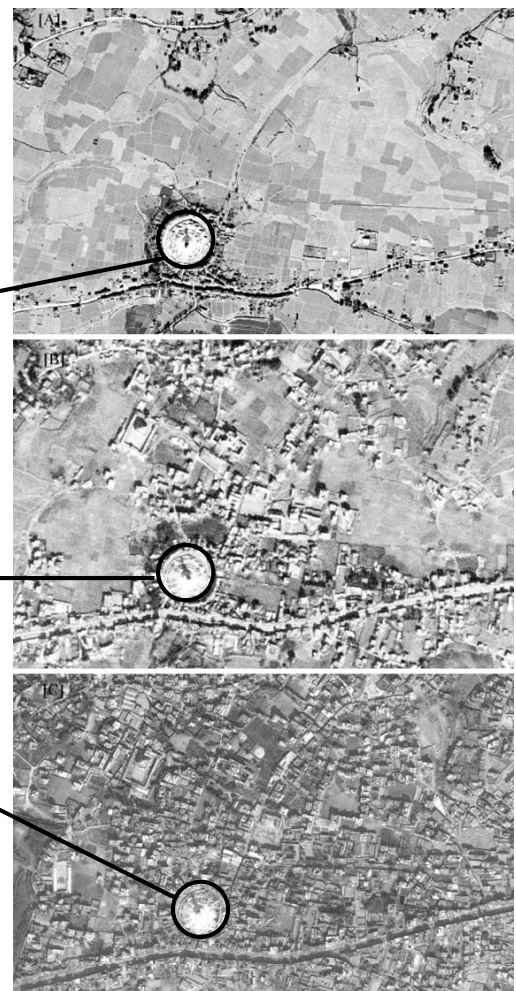


Boudhanath area of Kathmandu Metropolitan City,
Ward-6 (see up to down)

[A] CORONA satellite 1967

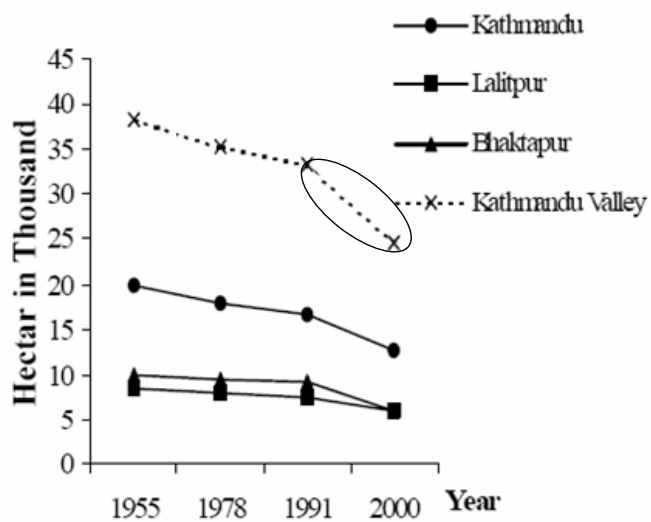
[B] SPIN-2 satellite 1991

[C] Satellite image clipped from Google Earth 2007.

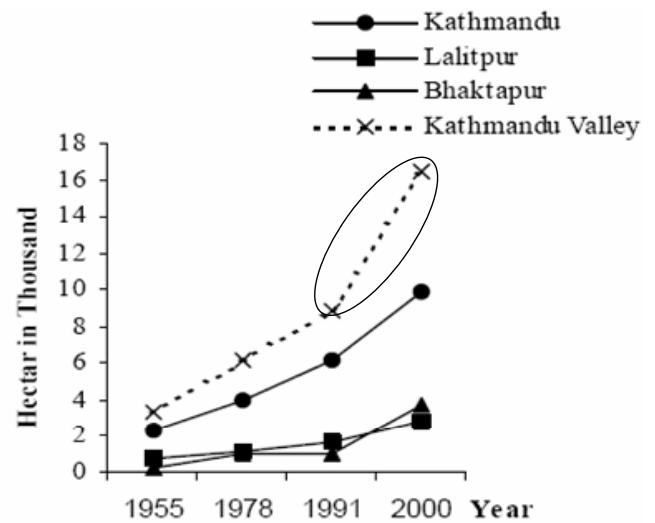


3. Environmental consequences - landscape changed in 4 decades

Non-built-up land



Expansion of built-up land



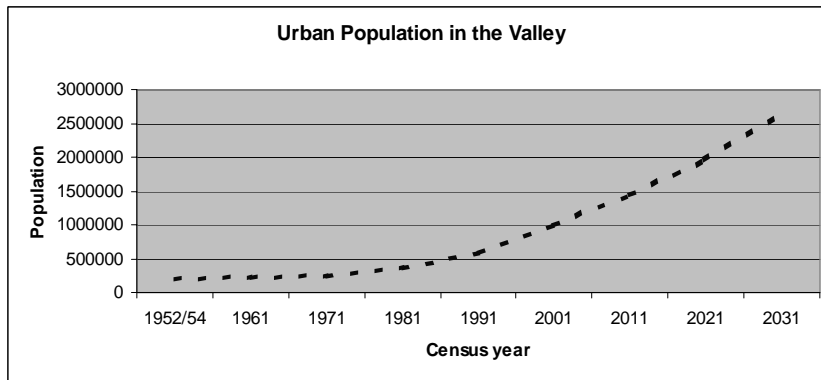
The urban land in the valley grew from 5% in 1984 to 10% in 2000. Agriculture land decreased from 64 % to 41% in the same period.

13

3. Environmental consequences - state of urban land in the valley from different perspective



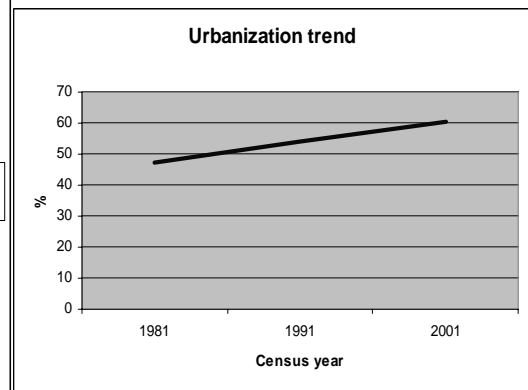
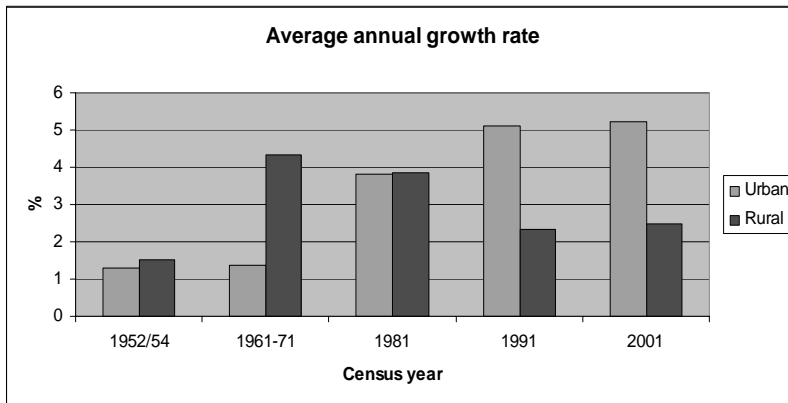
3. Environmental consequences – high population influx



38% Migrants in urban area
Reason?

- 54% for 'family reasons'
- 18% for 'looking a job'
- 14.2% for 'easier life style'
- 9.1% for 'education/training'
- 0.6% due to 'natural disaster' in country side
- 0.3% for 'political reason'
- 3.8% for 'other purposes'.

Note: The value for the year 2011, 2021, 2031 are projected by CBS



3. Environmental consequences - traffic congestion and air pollution



Industries decreased (61%), from 2174 in 1991/92 to 847 in 2001/02



In the last 15 years from 1989 to 2004, the number of registered vehicles in Kathmandu increased 6.8 times to reach 249,282 in July 2004, almost 60% compared to total vehicles registered in the country

3. Environmental consequences - Squatters in a riverbank of Bagmati river system

The number of squatter settlements in Kathmandu valley grew from 17 with 2,134 inhabitants in 1985 to 33 with the population of 6,355 in 1992; and to 61 having population of 11,862 in 2000



(400 meter away from South-East corner of Tribhuvan International Airport runway).

17

3. Environmental consequences - water shortage in Kathmandu



18

4. Concluding remarks

Several urban and regional development plans were made since last five decades but have failed to address the consequences properly. *Implementation of plans often affected by the political circumstances in the country. For example, the government with the assistance of UNDP and the World Bank prepared a Structural Plan of Kathmandu Valley in 1987 aiming to provide guidelines for the physical development of metropolitan region for the year 2010. Because of the political situation changed in 1990, this plan was never implemented.*

Burgeoning population; untraced urban development and daunting urban environment are serious concerns in the city. Haphazard and unguided land change process invited many environmental consequences such as inadequate housing, poor urban services and air pollution in the Kathmandu city.

Horizontal urban growth is observed. Employing vertical urban growth strategies through developing high-rise buildings may cope with limited land resources to solve malpractices of land development and accommodate the growing population in the city.

Because of high population influx from different parts of the country, basic urban services such as electricity, water and transportation required urgent attention in the valley. However declining of manufacturing industries and emergence of new service industries in the valley could be a new hope for revitalizing the city environment.

19



Multi agent system for modeling urban dynamics: A case study of the Tokyo Metropolitan area

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Abstract

For some time now, Cellular automata (CA) and Multi Agent System (MAS) have been in popular use for urban simulation. Though the CA have many advantages for modeling urban phenomena, CA model are constrained by their simplicity, and their ability to represent real world phenomena. MAS allow us to simulate the individual actions of diverse agent, flexible behavior mechanism, but it has some drawbacks in real world phenomena too, as it is so complex with too many parameters behaviors. This study focuses the issue of Multi Agent System Model, integrated with CA, and improves it to simulate urban dynamics in reality.

Firstly, we bring forth the model of integrating MAS and CA, and define the Agents, their behaviors, and their interactive with urban environment. Second, we use exploratory data analysis, spatial logistic regression, and variables and GIS data analysis method to calibrate the parameter of model. Third, we employ the model to simulate the land use change and evaluate the result with reality using structural measurement, fractal analysis method.

Now I have finished the data collecting and transformed them into the format for model's calibration. The program code for simulation has finished by and large. Next step I will calibrate the model's parameters using data of 1984 and simulation the urban dynamics during 1984 – 1994 year by year, and evaluate the model using spatial statistics methods.

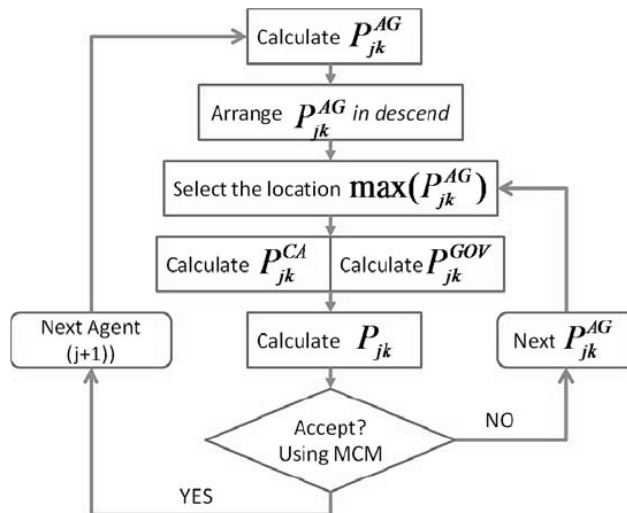


Fig. 1 The process of urban agent location selection

Where

P_{jk}^{AG} is The probability of accepted a decision maker i ;

P_{jk}^{CA} is the probability that location k is accepted as land use j by urban environment;

P_{jk}^{GOV} is the probability that location k is accepted as land use j by Government agent;

P_{jk} is the probability that location k is accepted as land use j at last.

Network city analysis using international air passenger flow data:

A global perspective

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Abstract

This research devised the Global Network Analysis Model (GNAM) which is a social network revision model to analyze the international air network. This model is organized with urban centrality analysis, the connectivity analysis of the airline, the hierarchy analysis of cities and air lines, the central structure analysis of the global network, the nearest-neighbor distance analysis between the cities. International air network data acquired in 1992 and 2004 were used to analyze the urban centrality and functional interaction with the global network change.

As a result, the global network cities with highest node were London, Paris, Frankfurt, Amsterdam and New York in both years. Tokyo was included in this class in 1992, but removed in 2004. The regional network cities in 1992 were Rome, Zurich, Singapore, Los Angeles, Hong Kong, and so forth, but in 2004 were Tokyo, Singapore, Madrid, Hong Kong, Bangkok, and so on. The global network city and the regional network city have been selected by the hierarchy of the Global Centrality, and they explain the functional difference of each city on the global network. The global network is centered on the global network city, and it can be connected to the regional network city carrying out the hub with function of each continent, so the whole world forms one network. The global network forms a multi-layer network, in 2004, the interaction between each city becomes closer, and so the structure of the network has been done more compact around the global network city.

The global network compositely appears the diffusion and the centralization by each sub-network. The global network was divided by the Pacific Ocean and the Atlantic Ocean. In the case of Asia, the Pacific Rim, the one nucleus structure of Tokyo, changed into the multiple nuclei structure by the growth of Singapore, Seoul, Hong Kong, Bangkok, and so on. Not only that, the interaction between Asian cities has become more dynamic. On the other hand, Europe and the American Atlantic form one network around London, Paris, New York, Frankfurt and Amsterdam, and the concentration to London is strengthened more in 2004. The interaction between the European and Asian cities were strengthened more where the network of the Middle East was formed around Dubai. In Africa and South America, however, it was analyzed that oneself network system is still feeble into the global network.

Keywords: network analysis, network city, global network, centrality, international air flow.

Location analysis of retail stores in Japan in terms of retail trade management type

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Abstract

Retail trade management type is one of the prevalent issues in recent retail trade studies in Japan. This study describes relative retail location tendency of each management type in Japanese urban area. The main purpose of this study is to show the location tendency of retail trade using Type of Management Index (TMI) and their regional differences in Japan. Total 113 MEAs (Metropolitan Employment Area, a kind of urban area) were selected for the analysis. One kilometer square population mesh (grid) data was used as ancillary information. Nine types of retail trade management (i.e. department store, GMS, clothing supermarket, food supermarket, furnishing supermarket, home center, convenience store, drugstore and specialized store) were chosen for the analysis.

Firstly, the LPI (Location Population Index), which explores absolute retail location tendency of each management type in urban area for each type of retail trade management, was computed using the mesh data. A significant relation between the number of shops and the distribution of population was found. Secondly, TMI was computed using LPI to compare the results between the MEAs. As a result, the department store showed the highest LPI in all MEAs where as the drugstore and specialized store maintained as second and third highest, respectively. Based on LPI, the home center was found to be the lowest one. Interestingly, the drugstore scored the highest TMI in metropolitan area. The specialized store, convenience store and home center showed very small differences of TMI in between the MEA. The TMI tendency of the department store and GMS were very high in local area as compared to other retail trade management types. In addition, the study is able to show the spatial differences of type management very clearly.

Keywords: retail trade management type, location analysis, mesh data, MEA.

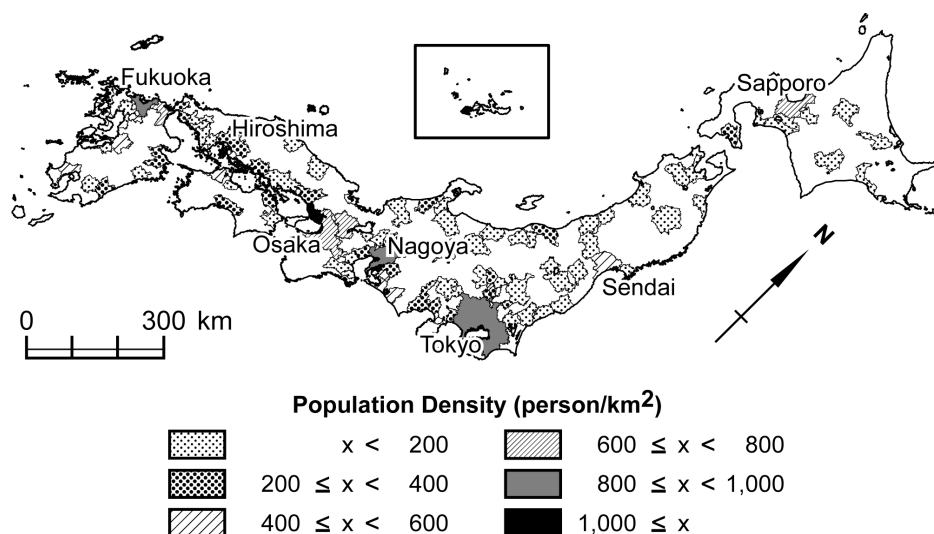


Figure: Metropolitan employment area in Japan (2000)

業態別にみた日本の都市圏における小売業の立地分析 メッシュデータを用いて

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キーワード: 業態, 立地分析, メッシュデータ, 大都市雇用圏

(1) 研究目的

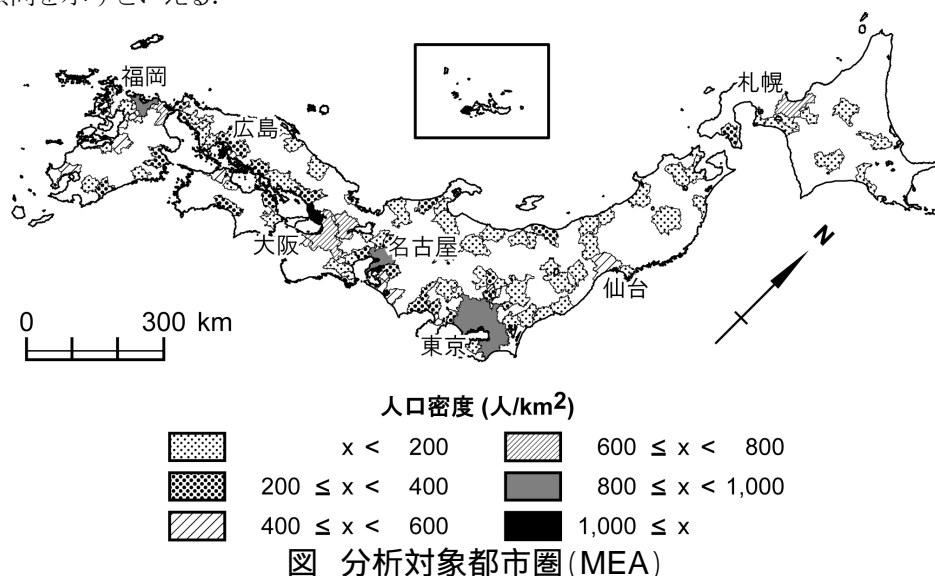
近年, 日本における流通・商業研究のキーワードのひとつに, 「業態店」が挙げられる. 従来の研究では, 取り扱い品目による店舗の分類, すなわち「業種」が注目されてきたが, 現在では「業種店」から「業態店」へのシフトが進んでいる(荒井・箸本, 2005). そこで本研究では, 金本・徳岡(2001)にて提唱された 113 の「大都市雇用圏(MEA)」において, 各業態の立地傾向の違いを明らかにすることを目的とする.

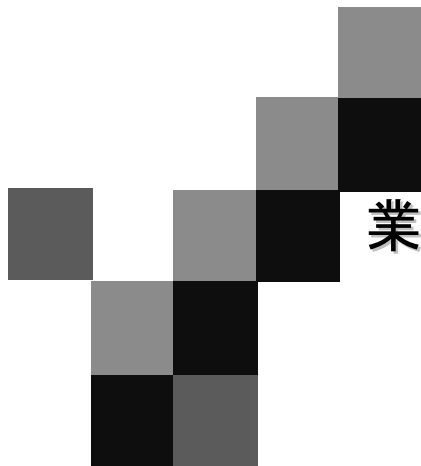
(2) 利用データと研究方法

データには, 第 3 次区画のメッシュデータを用いることにした. なお, 業態に関しては, 2002 年に行われた商業統計におけるデパート, 総合スーパー, 衣料品スーパー, 食料品スーパー, 住関連スーパー, ホームセンター, コンビニエンスストア, ドラッグストア, 専門店の 9 業態を分析対象とし, 人口に関しては 2000 年に行われた国勢調査の結果を用いた. はじめに, 業態ごとに都市圏において店舗が立地するメッシュの平均人口(以下, 立地人口とする)を求めた. 次に, 立地人口を業態ごとに比較し, 人口との関係をみた. さらに, 都市圏間における分析対象全業態の立地人口により各業態の立地人口を標準化し(以下業態指数とする), 都市圏による比較を行い, その空間的な特徴を検討した.

(3) 分析結果

分析の結果, 全 MEA における平均立地人口が最も高いのは百貨店であり, 次にドラッグストア, 専門店と続いた. 一方, 最も低いのはホームセンターであり, 次はコンビニエンスストア, そして衣料品スーパーの順であった. また, 業態指数を MEA ごとに比較すると, 業態によってその空間的な分布に違いがみられた. デパートや総合スーパーは, 地方圏の MEA において業態指数が高くなる傾向にあった. すなわち, 地方圏においてこれらの業態は, 人口の多い地域すなわち中心部に立地する傾向にあるといえる. 一方, コンビニエンスストアは大都市圏の MEA でも業態指数が高くなる傾向にある. なお, 都市圏間における業態指数の分散がの差が小さかったのは専門店やコンビニエンスストア, ホームセンターであった. したがって, これらの業態は日本全国において同様の立地傾向を示すといえる.





業態別にみた日本の都市圏における 小売業の立地分析 —メッシュデータを用いて—

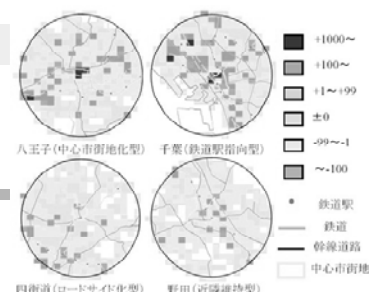
2007年空間分野合宿
2007年7月21日
駒木伸比古



はじめに(研究目的ほか)

- 「業種店」から「業態店」へのシフトが進展
- 大都市圏と地方都市では業態店の進出も異なると考えられる
- 業態ごとの立地を比較することで、都市を分類できないか？
- 全国一律に整備されているメッシュデータを利用できないか？

関連する先行研究など



- 後藤(1997)
 - ✓ 従業者密度の空間形状や中心地点への集中度合により、全国135都市をグループピング
- 浅野(2003)
 - ✓ スtockバランスの概念を用いて、地方都市における旧市街地と郊外の違いを示唆
- 菊池(2005)
 - ✓ メッシュあたりの従業者数を用いて、都市の内部構造変動を示す
- 猪俣ほか(2006)
 - ✓ 国道16号線沿いの商業集積地区を、従業員数の経年変化により4つのタイプに分類

データに関して

- メッシュデータの利点: 統計単位として基準化されており、年次・データ間のオーバーレイが可能
- いくつかのメッシュデータを組み合わせる(＝オーバーレイさせる)ことによって分析したい
- 分析単位をどのように設定するか? → 金本・徳岡の提唱する大都市雇用圏(MEA)を利用する

都市雇用圏とは

- 金本・徳岡(2001)による定義
 - ✓ DID人口により中心都市を設定
 - ✓ 中心都市への通勤率が10%以上の市町村を郊外都市とする
 - ✓ 同一都市圏内に複数の中心都市が存在することを許容する
- 2000年現在、113の大都市雇用圏(MEA、中心都市のDID人口が5万以上)と157の小都市雇用圏(McEA、中心都市のDID人口が1~5万)が定義される



分析対象業態(現時点)

- 商業統計に基づく以下の9業態を分析対象にした
 - ✓ 百貨店
 - ✓ 総合スーパー
 - ✓ 衣料品スーパー
 - ✓ 食料品スーパー
 - ✓ 住関連スーパー
 - ✓ ホームセンター
 - ✓ コンビニエンスストア
 - ✓ ドラッグストア
 - ✓ 専門店

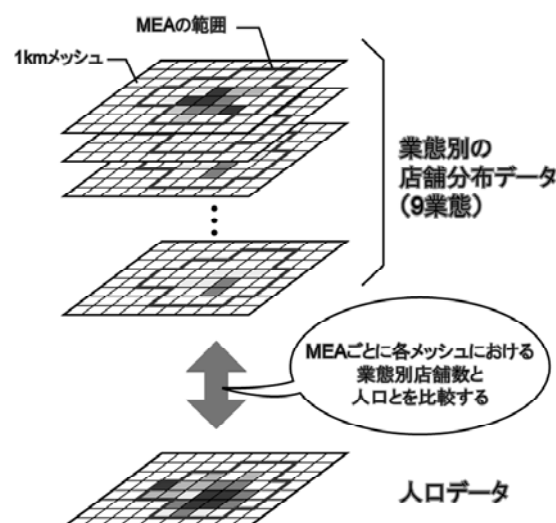
利用データと分析方法

■ 利用データ

- ✓ 平成12年国勢調査
- ✓ 平成14年商業統計
(いずれも3次メッシュ)

■ 分析方法

- ✓ MEAに対応するメッシュ群を抽出し、国勢調査のデータと商業統計のデータをオーバーレイさせる



Phase1: 業態の立地するメッシュ人口

- 店舗が立地するメッシュの人口は、業態ごとに違うのではないか？
- 各MEAにおいて、業態ごとにメッシュの人口と店舗数とを比較
- 業態ごとに立地するメッシュの人口を集計して、(業態が立地する)1メッシュあたりの人口を「立地人口」とする

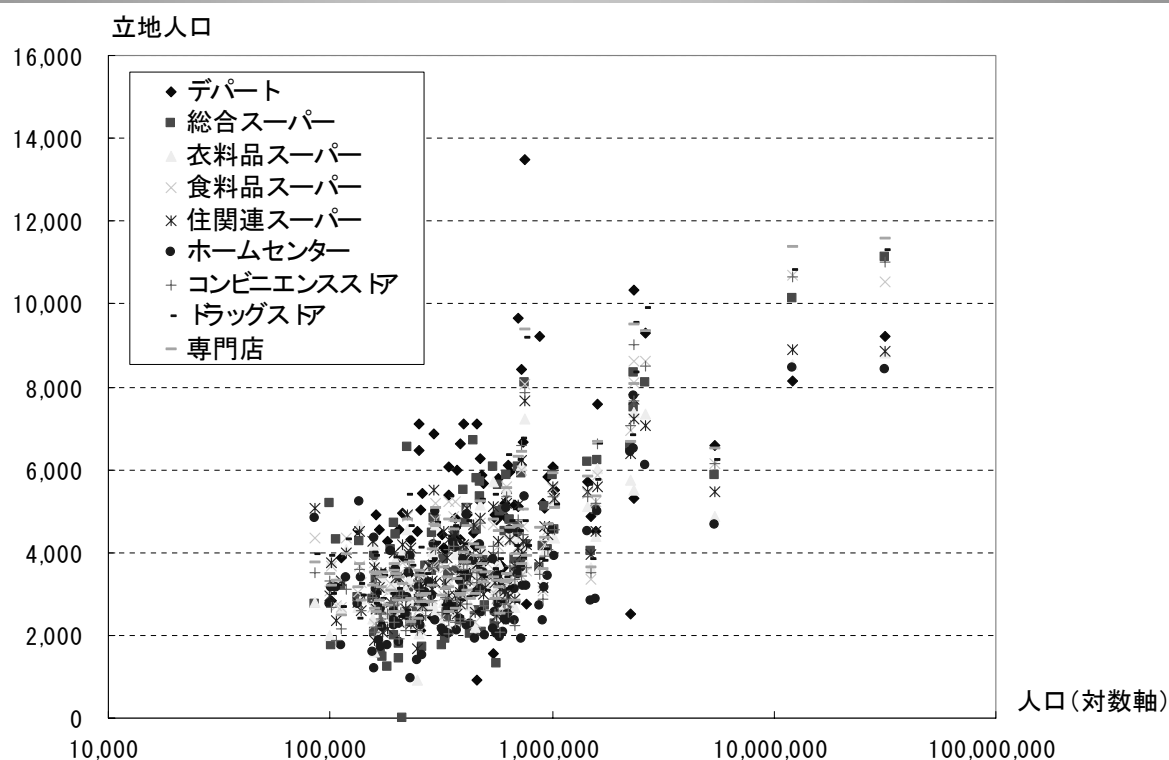
立地人口の計算結果 (1)

D1	名前	G	H	I	J	K	L	M	N	O
1	名前	デパート	総合スーパー	衣料品スーパー	食料品スーパー	住関連スーパー	ホームセンター	コンビニエンスストア	ドラッグストア	専門店
2	札幌市	2,494.4	6,531.5	5,759.3	6,956.0	6,400.1	6,429.3	7,073.3	6,830.0	6,661.8
3	函館市	4,840.0	4,505.2	3,941.0	5,244.0	4,449.8	4,093.2	4,731.3	4,588.5	4,757.4
4	旭川市	3,193.0	4,010.3	3,901.1	3,878.8	4,189.2	3,813.6	3,606.9	3,528.0	3,755.2
5	室蘭市		3,362.7	3,580.6	2,502.3	2,900.1	2,926.3	2,746.7	3,097.4	2,816.3
6	釧路市	3,461.5	3,155.8	3,332.0	3,867.5	3,943.5	3,505.8	3,623.8	4,624.4	3,746.7
7	帯広市	2,103.0	3,431.0	3,335.0	3,068.1	3,140.1	2,376.5	2,860.2	2,743.9	2,942.8
8	北見市	4,559.0	2,923.3	2,688.6	3,049.4	2,795.4	2,740.7	2,819.7	2,398.0	3,159.3
9	岩見沢市	3,886.0	3,192.0	2,682.3	2,671.7	3,302.4	1,752.4	2,168.6	2,658.0	2,454.8
10	苫小牧市	3,883.0	1,806.3	3,107.1	3,481.3	3,380.0	2,288.3	3,078.7	3,884.1	3,391.2
11	千歳市		3,902.0	4,202.4	3,756.1	3,625.6	4,351.1	3,287.4	3,916.0	3,503.4
12	青森市	5,390.0	3,493.0	3,308.5	5,228.4	4,318.9	2,754.5	4,069.9	5,356.6	4,768.3
13	弘前市	4,070.3	1,898.3	3,011.4	3,616.7	3,251.2	2,082.1	2,906.5	3,106.3	3,094.5
14	八戸市	3,220.5	2,420.7	2,936.2	3,324.1	3,876.4	2,587.3	2,882.5	2,747.2	3,385.8
15	盛岡市	6,260.7	5,705.5	3,752.2	3,376.0	3,969.0	3,101.8	3,065.3	3,420.8	4,112.6
16	仙台市	4,510.6	5,034.2	4,407.0	5,222.9	4,507.0	2,872.0	5,188.5	5,731.6	5,337.9
17	石巻市	4,947.0	0.0	4,024.6	3,768.7	4,177.9	2,957.8	2,938.5	3,773.0	3,226.5
18	秋田市	929.0	4,567.0	3,648.1	3,152.0	3,710.6	3,045.1	3,265.1	3,657.4	3,536.9
19	山形市	5,859.5	2,062.5	3,312.0	3,405.6	3,421.6	2,563.6	3,360.5	3,756.5	3,729.7
20	鶴岡市		2,063.3	1,614.7	2,284.8	1,887.9	1,211.6	2,084.1	2,733.6	2,624.1
21	酒田市	4,531.0	2,050.7	3,406.0	2,754.8	3,144.6	1,866.8	2,524.9	2,272.1	2,822.3
22	福島市	4,889.0	3,271.5	3,135.7	3,021.4	3,345.1	2,253.2	2,746.9	2,914.2	3,056.0
23	会津若松市		4,710.0	3,257.6	3,571.0	3,525.8	2,365.5	2,836.5	3,542.2	3,551.2
24	郡山市	1,554.0	3,420.8	3,367.1	3,601.9	3,895.3	2,168.5	2,855.9	3,609.9	3,377.1
25	いわき市		2,536.8	2,644.9	2,868.2	2,955.5	2,655.7	2,299.4	3,049.2	2,622.4
26	水戸市	3,212.7	3,509.1	2,662.2	3,102.4	2,877.1	2,369.8	2,239.9	2,793.5	2,824.5
27	日立市	4,313.0	2,941.6	3,127.1	3,571.7	2,756.7	3,304.3	2,401.4	2,848.8	2,980.4

立地人口の計算結果 (2)

	平均	標準偏差	最大値	最小値
デパート	5,248.2	2,005.2	13,483.5	929.0
総合スーパー	3,955.1	1,841.1	11,139.0	0.0
衣料品スーパー	3,671.0	1,312.1	8,823.2	911.4
食料品スーパー	3,865.3	1,590.4	10,673.6	2,121.2
住関連スーパー	3,867.6	1,363.9	8,894.6	1,680.7
ホームセンター	3,215.6	1,363.4	8,440.0	965.5
コンビニエンスストア	3,589.2	1,689.8	11,005.7	1,856.9
ドラッグストア	4,103.2	1,722.6	11,311.7	2,055.3
専門店	4,063.8	1,715.6	11,552.5	2,330.8

立地人口の計算結果 (3)



立地人口の分析結果 (4)

■ 日本における業態ごとの立地傾向

- ✓ 立地人口の多い業態: 百貨店、ドラッグストア、専門店など
- ✓ 立地人口の少ない業態: コンビニエンスストア、ホームセンター、住関連スーパー、衣料品スーパー

Phase2: MEAによる立地人口の違い

■ 各MEAごとに、業態別の立地人口は異なるのではないか？

$$\text{MEA(A)における業態aの業態指数} = \frac{\text{MEA(A)における業態aの立地人口}}{\text{MEA(A)における対象全業態の立地人口}}$$

- MEA(A)において、業態aが相対的にどれほど人口の多い地域(メッシュ)を指向しているか？をあらわす指標
- MEAごとに比較することにより、業態の立地の地域的な差異を示すことが可能ではないか...？

業態指数の計算結果

A1	B	C	D	E	F	G	H	I	J	K	L
名前	デパート	総合スーパー	専門スーパー	衣料品スーパー	食料品スーパー	住関連スーパー	ホームセンター	コンビニエンスストア	ドラッグストア	その他スーパー	専門店
4 秋田市	0.28	1.39	1.02	1.11	0.96	1.13	0.93	0.99	1.11	0.99	1.08
5 旭川市	0.87	1.09	1.08	1.06	1.06	1.14	1.04	0.98	0.96	0.89	1.02
6 足利市		1.37	1.07	1.05	1.09	0.94	1.36	0.94	1.00	0.94	1.03
7 安城市		1.41	1.01	0.98	1.05	1.06	0.63	0.83	1.17	0.97	1.04
8 石巻市	1.62	0.00	1.25	1.32	1.23	1.37	0.97	0.96	1.24	0.97	1.06
9 伊勢崎市		0.92	0.98	1.13	0.93	0.96	0.90	0.78	0.94	0.89	1.03
10 伊勢市		0.48	0.69	0.65	0.66	0.81	0.53	0.80	1.10	0.88	1.05
11 今治市	1.47	1.00	0.90	0.82	0.88	1.02	0.87	0.89	0.90	0.88	1.04
12 いわき市		1.01	1.12	1.06	1.15	1.18	1.06	0.92	1.22	0.94	1.05
13 岩国市		0.94	0.94	0.78	0.87	1.40	0.52	0.96	1.30	0.94	1.05
14 岩見沢市	1.69	1.39	1.19	1.17	1.17	1.44	0.76	0.95	1.16	0.71	1.07
15 宇都宮市	1.55	1.24	0.91	0.97	0.92	0.94	0.71	0.87	1.14	0.99	1.07
16 宇部市	1.90	0.59	0.91	0.97	0.96	0.94	0.53	0.95	0.95	0.85	1.03
17 大分市	1.15	1.04	0.92	0.98	0.93	0.93	0.78	1.00	1.01	0.95	1.04
18 大垣市	2.03	1.14	0.84	0.72	0.90	0.99	0.69	0.79	0.91	0.93	1.06
19 大坂市	0.74	0.92	0.88	0.77	0.96	0.80	0.76	0.96	0.98	0.98	1.03
20 太田市		0.83	1.07	1.08	1.07	1.04	1.09	0.81	1.06	1.00	1.02
21 大牟田市	1.89	0.95	0.92	0.92	0.95	0.83	0.93	0.96	1.20	1.05	1.04
22 大村市	0.93	0.57	1.18	1.24	1.19	1.23	1.02	0.87	0.98	1.12	1.04
23 岡崎市	1.09	1.12	1.04	1.13	0.93	1.12	1.09	0.82	1.05	1.01	1.03
24 岡山市	1.39	1.15	1.01	1.04	0.96	1.13	0.81	1.00	1.09	0.98	1.04
25 沖縄市		0.73	0.88	0.52	1.05	0.66	1.01	0.96	0.86	0.83	1.03
26 小田原市	1.00	0.96	1.04	0.98	1.11	1.00	0.96	0.95	1.05	0.95	1.03
27 帯広市	0.72	1.18	1.06	1.15	1.06	1.08	0.82	0.98	0.94	0.86	1.01
28 小山市		1.29	1.18	1.27	1.20	1.15	1.06	0.87	1.22	1.05	1.06
29 鹿児島市	1.38	0.97	0.97	1.01	0.99	1.02	0.32	1.08	1.11	0.95	1.06

業態別にみた業態指数の比較

	平均	標準偏差	最大値	最小値
デパート	1.37	0.45	2.33	0.28
総合スーパー	1.02	0.30	2.12	0.00
衣料品スーパー	0.97	0.19	1.52	0.42
食料品スーパー	1.01	0.12	1.29	0.66
住関連スーパー	1.02	0.18	1.61	0.63
ホームセンター	0.84	0.20	1.48	0.32
コンビニエンスストア	0.92	0.08	1.08	0.59
ドラッグストア	1.06	0.11	1.57	0.79
専門店	1.05	0.02	1.12	1.00

百貨店

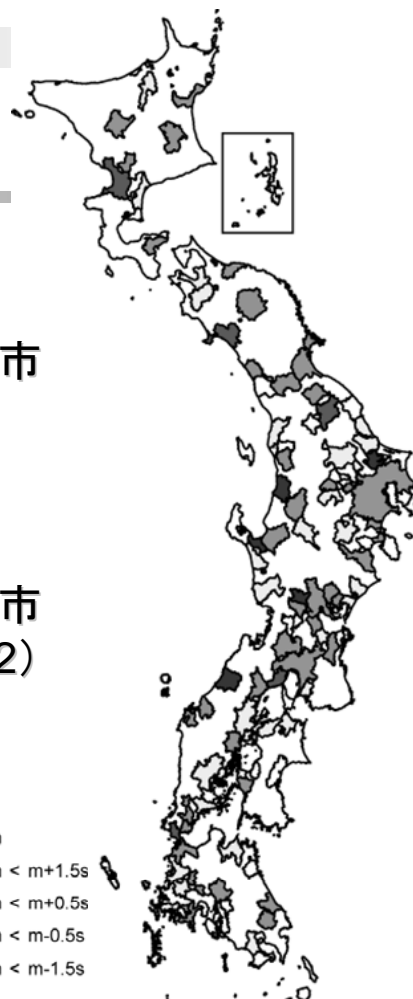
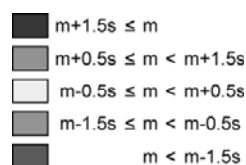
最大値:2.33、最小値:0.28、平均:1.37、標準偏差:0.45

■ 業態指数の高いMEA

- ✓ 高岡市(2.33)、鳥取市(2.27)、岐阜市(2.12)、上越市(2.08)、つくば市(2.08)

■ 業態指数の低いMEA

- ✓ 秋田市(0.28)、札幌市(0.38)、郡山市(0.51)、神戸市(0.57)、下関市(0.62)
- 百貨店は地方都市ほど人口の多い地域(=中心市街地付近)に立地する
- 日本海側で業態指数が高い？



総合スーパー

最大値:2.12、最小値:0.00、平均:1.02、標準偏差:0.30

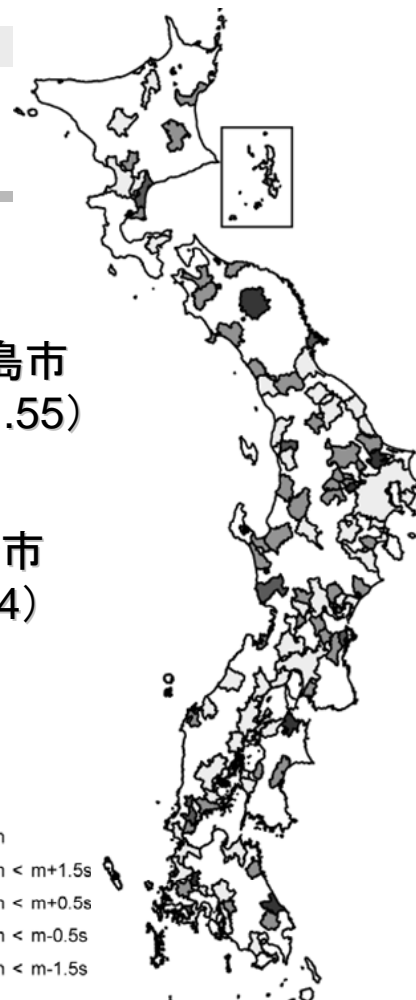
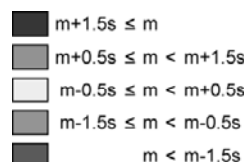
■ 業態指数の高いMEA

- ✓ つくば市(2.12)、宮崎市(1.70)、徳島市(1.60)、蒲郡市(1.56)、久留米市(1.55)

■ 業態指数の低いMEA

- ✓ 石巻市(0.00)、福井市(0.42)、三条市(0.44)、山口市(0.48)、伊勢市(0.44)

- 大都市近辺および地方中心都市で高い値を示している？



衣料品スーパー

最大値:1.52、最小値:0.42、平均:0.97、標準偏差:0.19

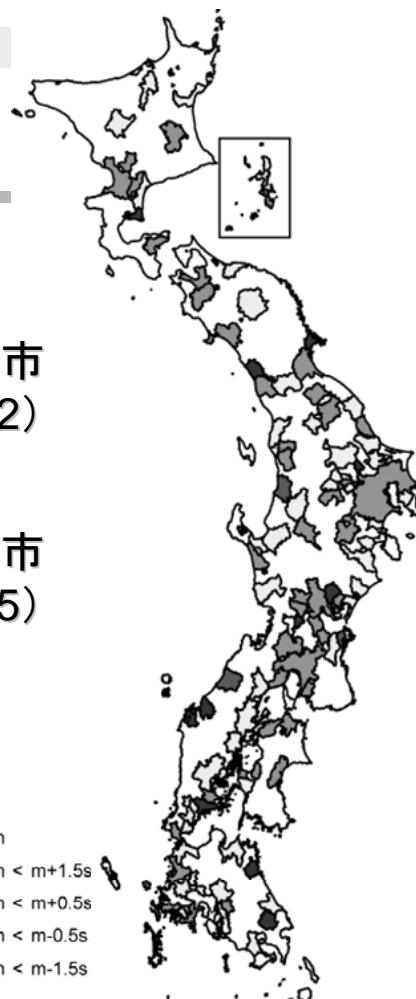
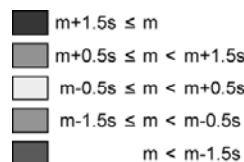
■ 業態指数の高いMEA

- ✓ 彦根市(1.52)、松江市(1.42)、徳山市(1.33)、都城市(1.33)、酒田市(1.32)

■ 業態指数の低いMEA

- ✓ 上越市(0.42)、沖縄市(0.52)、蒲郡市(0.61)、鳥取市(0.65)、伊勢市(0.65)

- 太平洋ベルトに属する都市では比較的低い値を示している？



食料品スーパー

最大値:1.29、最小値:0.66、平均:1.01、標準偏差:0.12

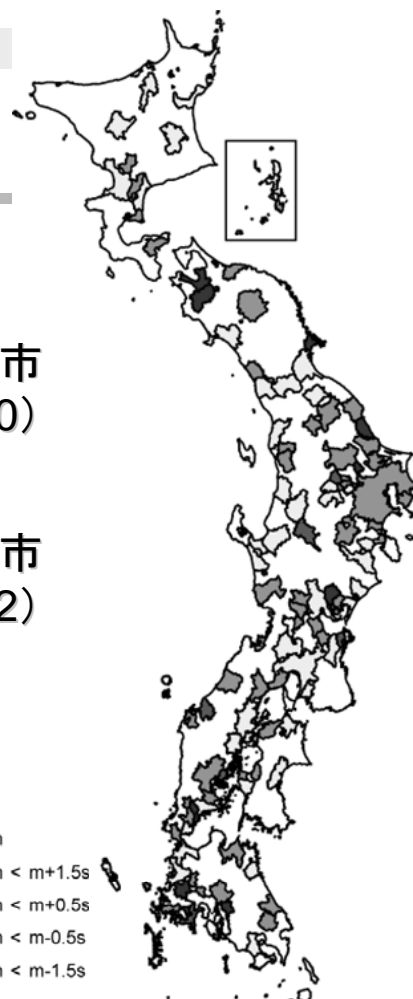
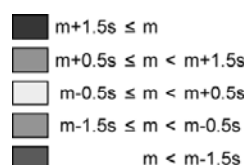
■ 業態指数の高いMEA

- ✓ 弘前市(1.29)、日立市(1.28)、石巻市(1.23)、八代市(1.16)、小山市(1.20)

■ 業態指数の低いMEA

- ✓ 伊勢市(0.66)、長崎市(0.79)、米子市(0.81)、桐生市(0.82)、松本市(0.82)

- 大都市近郊・地方都市で高い値を示している？



住関連スーパー

最大値:1.61、最小値:0.63、平均:1.02、標準偏差:0.18

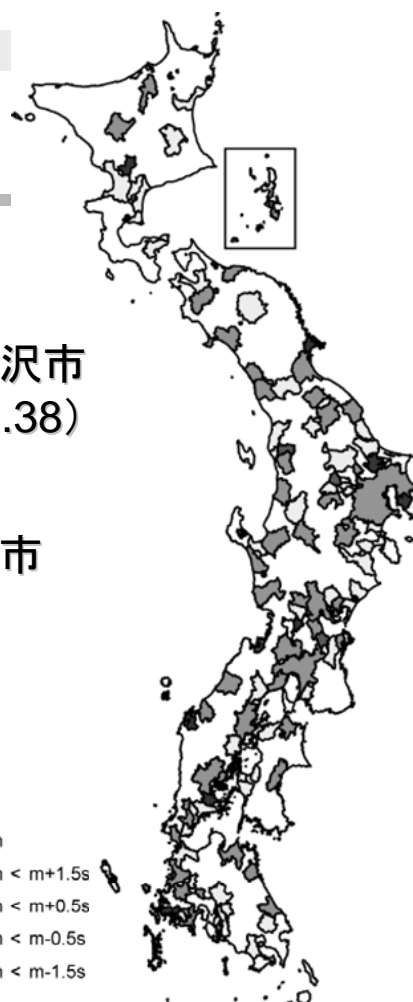
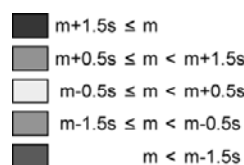
■ 業態指数の高いMEA

- ✓ 彦根市(1.61)、松江市(1.46)、岩見沢市(1.44)、岩国市(1.40)、木更津市(1.38)

■ 業態指数の低いMEA

- ✓ 三条市(0.63)、桐生市(0.66)、沖縄市(0.66)、津市(0.74)、舞鶴市(0.75)

- 大都市近郊・地方都市で高い値をしめす



ホームセンター

最大値:1.48、最小値:0.32、平均:0.84、標準偏差:0.20

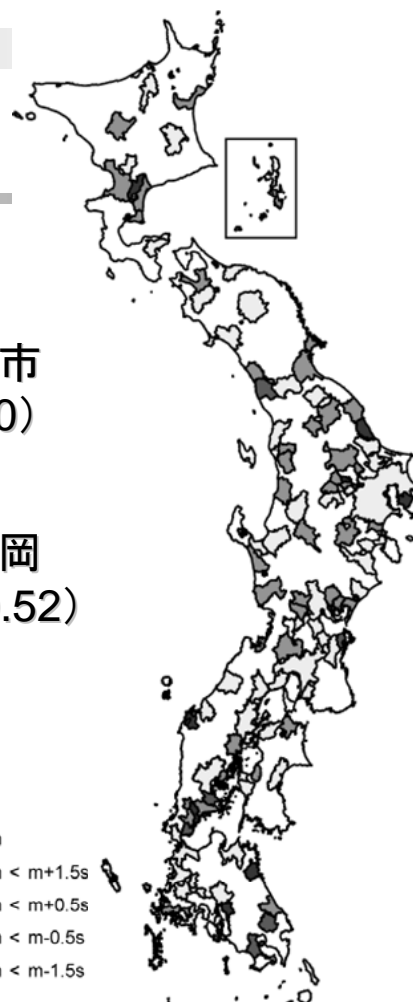
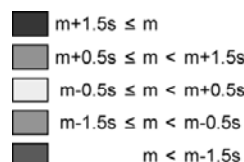
■ 業態指数の高いMEA

- ✓ 延岡市(1.48)、松江市(1.38)、足利市(1.36)、八代市(1.31)、千歳市(1.30)

■ 業態指数の低いMEA

- ✓ 鹿児島市(0.32)、都城市(0.45)、鶴岡市(0.52)、刈谷市(0.52)、岩国市(0.52)

- 大都市圏均衡でやや高い値を示すものがみられる
- 北海道では高い値を示すMEAが多い？



コンビニエンスストア

最大値:1.08、最小値:0.59、平均:0.92、標準偏差:0.08

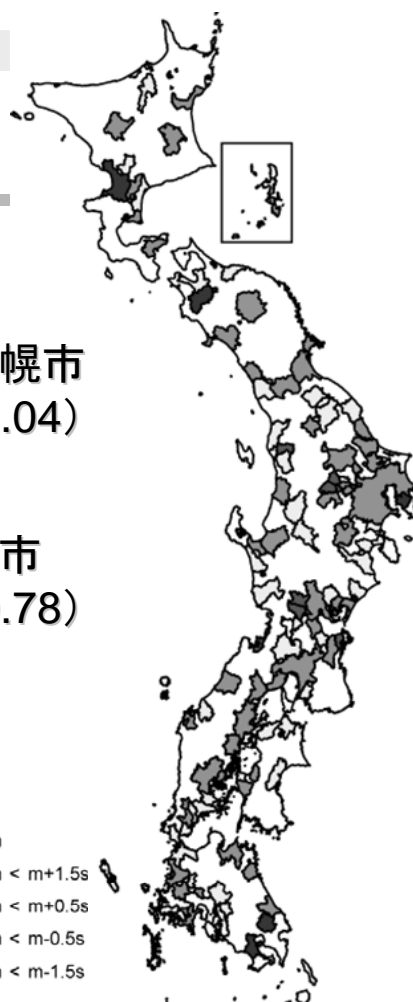
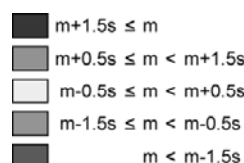
■ 業態指数の高いMEA

- ✓ 鹿児島市(1.08)、都城市(1.07)、札幌市(1.07)、木更津市(1.07)、弘前市(1.04)

■ 業態指数の低いMEA

- ✓ 舞鶴市(0.59)、三条市(0.70)、桐生市(0.77)、前橋市(0.77)、伊勢崎市(0.78)

- 大都市圏・地方中心都市で高い値を示す



ドラッグストア

最大値:1.57、最小値:0.79、平均:1.06、標準偏差:0.11

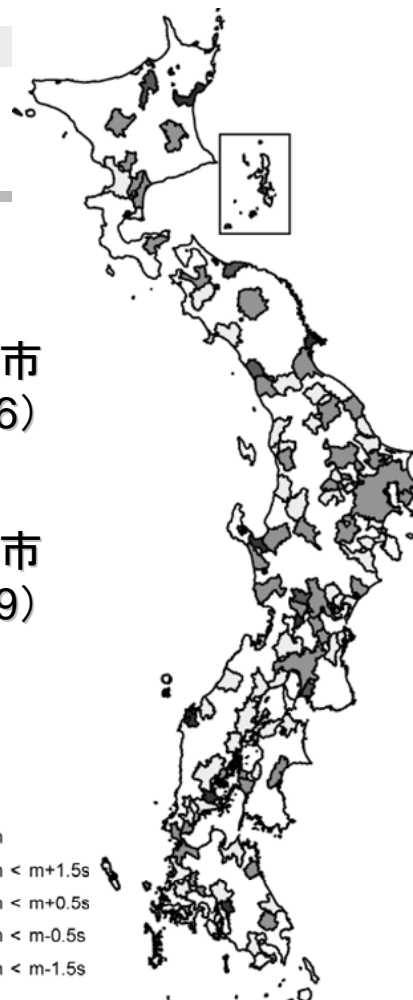
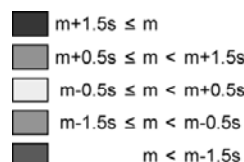
■ 業態指数の高いMEA

- ✓ 彦根市(1.57)、岩国市(1.30)、松江市(1.30)、八代市(1.26)、釧路市(1.26)

■ 業態指数の低いMEA

- ✓ 北見市(0.79)、沖縄市(0.86)、酒田市(0.88)、八戸市(0.88)、岐阜市(0.89)

- 南東北・日本海側で比較的高い値を示している？



専門店

最大値:1.12、最小値:1.00、平均:1.05、標準偏差:0.02

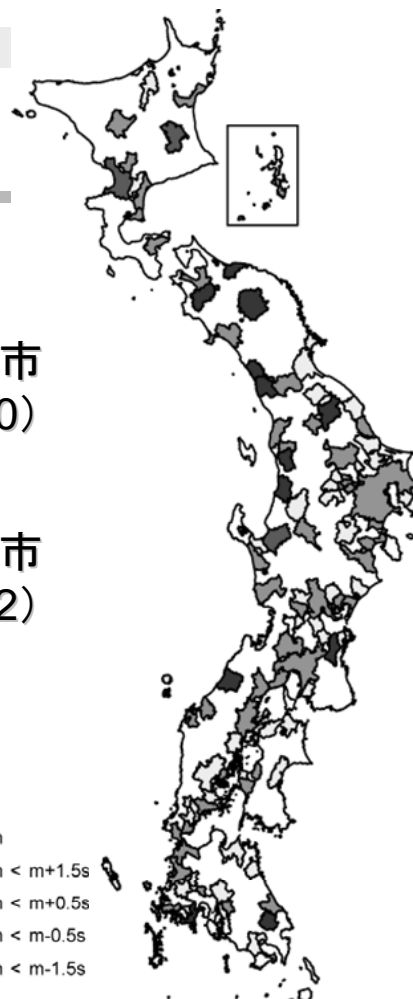
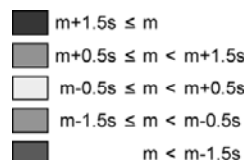
■ 業態指数の高いMEA

- ✓ 鶴岡市(1.12)、弘前市(1.11)、郡山市(1.10)、上越市(1.10)、盛岡市(1.10)

■ 業態指数の低いMEA

- ✓ 富山市(1.00)、札幌市(1.00)、帯広市(1.01)、室蘭市(1.01)、碧南市(1.02)


- 地方都市で高い値を示す
- 東北地方では値が高くなる？





現段階でのまとめ

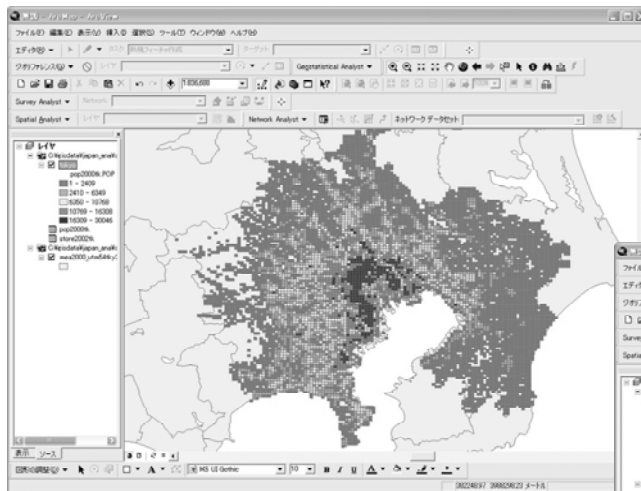
- 業態ごとの立地傾向はおおよそ掴めそう
- MEAによる業態立地の特徴もある程度は把握できそう
- 業態立地によりMEAの分類も出来そう？



今後の展開？（予定？）

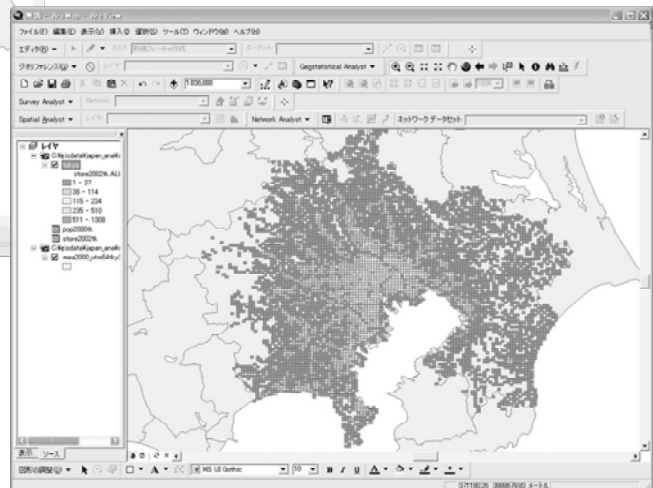
- 年次比較によってグループの変化もみることができないか →cf. 後藤(1997)、菊池(2005)
- 商業統計の年次比較は可能か？（調査方法の問題）
- 分析方法の是非（単なるオーバーレイだけでなく、MEAの人口・店舗分布の形状なども考慮したい...）
- その他

Thank you for your listening!



△ 首都圏における人口分布(2000年)

▽ 首都圏における店舗分布(2001年)



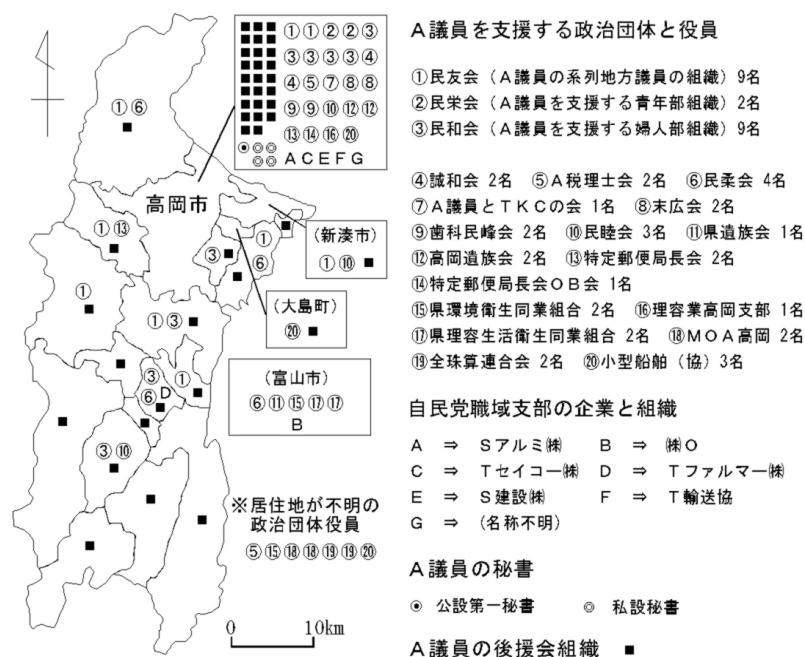
国会議員の後援会組織の地域的差異 衆議院富山県第三区選出議員を事例として

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キーワード: 国会議員, 選挙区, 後援会組織, 集票, 富山三区

既往の選挙地理学の諸研究を概観すると, 集計データに依拠した定量的な分析が多く, それを規定する質的部分の解明は未だ十分とはいえない. とくに, 管見する限りにおいても, ミクロな視点から国会議員の後援会組織を扱ったものは少数に留まる. そこで, 本研究は衆議院富山県第三区を対象に, A衆議院議員の集票組織の分析から, 議員が私的に組織する後援会組織の地域的差異とその要因について考察を行った. A議員の集票組織には, 職域別の政治団体が 20 団体, 企業や組織からなる自民党職域支部が 7 支部, 地域別の後援会組織が 44 組織存在した. これらの集票組織はいずれもが高岡市に偏在していた. とくに, 後援会組織のおよそ 6 割にあたる 26 組織が高岡市内の小学校区ごとにきめ細かく配置されていた. この要因として, 高岡市が選挙区内最大の票田地域であるにもかかわらず, 都市的地域特有の流動層と中選挙区時代からのライバル議員の影響から, A議員の相対得票率が比較的低い値で推移してきたことを挙げることができる. 一方, 高岡市外の地域では各市町村に後援会組織が 1 つずつ配置されていたが, 農協や系列地方議員によってA議員の後援会組織による集票が代替されている面が認められた. また, 後援会組織が設置される市町村は, 住民意識に強い影響を及ぼしているということだけでなく, 農協の設置地域や系列県議の選挙区地域, また, 公共事業が執行される地域とも深い関連があることが示唆された.



第 1 図 衆議院富山県第三区の市町村別からみた A 衆議院議員の集票組織の地域的展開 (2004 年)

図中の丸の中の数字は政治団体名の番号と対応し, その数は役員数を表す。

自民党職域支部の名称の一部は, アルファベットに差し替えてある。

図中の記号とアルファベットは各々が地域内にあることを示し, 地点を表現するものではない。

A 衆議院議員公設政策秘書 B 氏への聞き取りと A 衆議院議員の内部資料により作成。