

## Week 1

### Planning institutions:

- Canadian Institute of Planning (5 year and annual review)
- Ontario Professional Planning Institute (Provincial affiliate of CIP)

### What is analysis:

- Identifying (describing) and analyzing (explain) patterns
- Recognizing trends
- Urban Analysis: studying existing urban structures and their complex composition which is fundamental to successful urban design and development
- Instead, urban analysis makes specific facets of the urban environment readily comprehensible and available for discussion - the more issues investigated, the closer the understanding of the whole (eg to understand congestion: car ownership, supply etc)

## Week 2- September 21st

### Article 1- "Planner's use of information"

#### Main Message:

- Consultation leads to effective solution
- Addressing the root cause of problems
- importance of **engaging** stakeholders when making decisions

#### Lesson:

- 'look for yourself'-- do site visits, do not rely on secondary information
- get all opinions (public's, stakeholder's, etc)
- make the best use of the information to inform and educate
- explore solutions (analysis) before implementing

#### Questions for planners:

- what other approaches could be used

### Article 2- The Creative Class

#### Main message:

- creative cities are able to thrive- creative professionals to solve complex bodies of knowledge
- cross lines of old taboos- allows for innovation- allows for inclusive thinking
- more focus on the people rather than just business alone
- diversity is a good thing- different cultural values adds richness- reliable outcomes

#### Lesson:

- know your demographics (know how to attract them)
- get on board the creative class wagon

#### Question for planners:

- is the article too focussed on one particular group
- what are the consequences of the creative class
- is the concept of creative class transferable to other countries
- what about those not in favour of this

### **Creative city ranks (way to analyze creativity):**

- Creative Rank
- High-Tech Rank
- Innovation Rank
- Diversity Rank

### **Article 3- The Ruse of the Creative Class**

#### Main Message:

- cities must focus on their own identity (sense of people/place) in order to find their place in the new economic reality

#### Lessons learned:

- not all cities can be creative class orientated
- people are connected with their communities, wanting to see them thrive
- focus on people in your community
- irony- focus on importance of 'place' to attract creative class, but ignores the power of place in retaining

#### Questions for Planners:

- know your audience, think critically about new ideas

### **Factors affecting communities:**

- Public interest
  - regulations/ acts/ laws
- Private interests (eg: developers)
- Physical environment (eg Toronto Tunnels for the winter climate)
- Economy (market)
- People

### **What is Planning?**

#### Association of Collegiate Schools of Planning definition:

- A systematic & creative way to influence future neighbourhoods, cities, rural and metropolitan areas
- To serve communities by facing social, economical, environmental and cultural challenges
- Develop ways to preserve and enhance their quality-of-life;
- Find methods to protect the natural and built environment; (preserving culture)
- Identify policies to promote equity and equality;
- Structure programs to improve services to disadvantaged communities

- Determine methods to deal effectively with growth and development of all kinds. (planners prepare for and adapt for growth)
- Most planners share a common set of skills and values even though they may specialize in one or two substantive areas. Using their “planning toolkit” they:
  - involve all affected parties in important planning decisions;
  - help communities to develop their own vision of the future, preparing plans
  - responsive to shared community objectives;
  - analyze qualitative and quantitative information to suggest possible solutions to complex problems;
  - evaluate the cost-effectiveness of proposed projects and plans; and
  - present recommendations to public officials and citizen groups in a comprehensive and understandable way. We are not the deciders, we are the recommenders.

Royal Town Planning Institute definition:

- Managing the competitive uses for space and making places that are valued and have identity
- “mediating of space-- making of place”
- Using the term spatial planning:
  - Spatial - dealing with the unique needs and characteristics of places
  - Sustainable - looking at the short, medium and long term consideration of social, economic and environmental effects
  - Integrative - in terms of the knowledge, objectives and actions involved
  - Inclusive - recognising the wide range of people involved in planning
  - Value-driven - concerned with identifying, understanding and mediating conflicting sets of values
  - Action-oriented - driven by the twin activities of mediating space and making of place.

Canadian Institute of Planning (CIP)

- **"Planning"** means the *scientific, aesthetic, and orderly disposition of land, resources, facilities and services (more than built environment) with a view to securing the physical, economic and social efficiency, health and well-being of urban and rural communities.*
- Scientific: reasoned, systematic approach
- Aesthetic: visually appealing
- Orderly: implies planned approach
- Disposition: arrangement or placing, final settlement, bestowal, regulation, management
- Efficiency - in classic economic perspective implies “no waste:
- Health – critical aspect of planning – origins and today!
- Well Being – related to health (equity)

## Week 3- September 28th

### Sequence of research

#### Selecting the topic

- Driven by questions/problems which can be observed/experimented on
- Topic can be suggested by theoretical interest (speculative, not proved yet) or dictated by practical concerns (Academics vs. practitioners)

#### Formulating the problem

- In academic research, problems are made concrete and specific, and the topic is narrowed (manageable and amendable)
- BUT narrowing the topic a challenge
  - Defining what elements of a system to study and in what detail
  - Tension between interesting questions about the problem (peripheral) and drilling down to what you can deliver on
  - Efficiency, budget, time constraints

#### Formulating the hypothesis

- Role of hypotheses in research is to suggest preliminary, testable explanations of certain facts and to guide ensuing investigations (eg: a rise in vehicle use leads to the wizenig of public health)
- A) Based on a hunch – intuition – on what is observed
  - Limited approach as
    - Challenge of replication – is what observed true elsewhere?
    - Lacks connection to larger body of knowledge
- B) Based on theory or findings from other studies
  - Removes limitations of the hypothesis based on the “hunch”
  - The B) approach is expected in academic research ( building knowledge)
  - Often in planning reality – significant hypothesis don't exist

#### Relating Findings to other knowledge

- Planning inquiry can be a communal enterprise in that each study can rest on earlier work and provide a basis for future study
- Recognise the value of the professional groups ( OPPI knowledge exchange)
- Our Planning research can be conceptualized with two objectives in mind:
  - to resolve the immediate problem while drawing on past experience (What have others done to address this issue? What can we learn from them?)
  - to attempt to relate it to more generic problems, thus assisting in future problem solving
    - How can others learn from us ? Case study for academic research?
    - Knowledge exchange and research partnerships

## Designing the research

- Formulative or Exploratory
  - Formulating the problem for more precise investigation or for developing hypotheses
  - Methods
    - Survey of the literature – looking for leads
    - Interviewing selected practitioners – what works – agents of change
    - Analysis of insight stimulating examples – other analytical studies
  
- Descriptive Studies
  - Goal is to obtain complete and accurate information
  - Need to develop procedures carefully and avoid bias
  - Steps
    - Formulate objectives
    - Design data collection methods
    - Select the sample
    - Collect and check the data
    - Analyze the results (using statistical methods decided on as part of the procedures)
  
- Experimental
  - Goal to draw causal inference (think drug testing – how applied to the city?)
  
- Draw inferences from other completed studies
  - Use the conclusions from another case and apply it to your case
  
- Both types of research (III/IV) less prominent in the planner's tool kit
  - More on the academic research side of approaches
  - Theory driven hypothesis
  
- Approaches I) exploratory- and II) descriptive - tend to be most common in planning practice however elements of III) experiments and IV) inferences appear in larger centres (as those have more resources).
  
- planning consultants and private firm behavior: Consultants often provide the capacity for “study” or research in the city (because practicing planning don't have much time)

## Figures (Visual Communication)

- Like good writing, good graphical displays of data communicate ideas with clarity, precision, and efficiency. (The best graphic is self-explanatory!)

- Like poor writing, bad graphical displays distort or obscure the data, make it harder to understand or compare, or otherwise thwart the communicative effect which the graph should convey.
- Technology is not a substitute for skill and judgment (excel?)
- Good design
  - need a high data to chart ratio (E.g. titles, axes, etc. should not overwhelm the data presented)
  - Colors or shading should match ordering of data (Dark or Heavy Shading the highest)
  - Effective use of contrast (Colour, shading, texture, position etc..- BUT - balanced)
- Present all relevant information, even if it may be visually challenging to see (i.e. values too low to “appear” still conveying something)
- KISS – Keep it simple – focus on graphic fundamentals rather than making it “busy”

### Choosing Type of Figure:

#### 1. Pie Charts

- Use to illustrate parts as a percentage of some whole (or to highlight share of one part)
- BUT Difficult to compare one pie to another pie. (scaling). Arguably we are challenged to infer from those angles

#### 2. Bar Charts

- Great for categorical and nominal variables, especially with lengthy labels.
- Great for comparing values.
  - **Simple bar graphs** sort data into simple categories.
  - **Grouped bar charts** divide data into groups within each category and show comparisons between individual groups as well as between categories. It gives more useful information than a simple total of all the components.
  - **Divided/stacked bar graphs**
    - show proportional relationships between data within each bar.
    - show changes over time
    - make clear both the sum of the parts and each group’s contribution to that total.

### Explaining Visuals:

- You should explain the key results from the table, graph or diagram in your text
- Be brief, let table/figure provide details and your writing focus on big picture
- They are complements to one another – e.g. if presenting “percentages of a total” in the figure – provide the total in the writing (E.g. – “ Figure 2 provides the breakdown of Waterloo’s 73,000 housing units by type. Not surprisingly, single family dwellings dominate at 62% of this total...\_

### **Common Graph mistakes:**

- Wrong graph type.
- Missing text (numbers, labels, informative title)
- Inconsistent scale. (scale must be constant across the graph; don't change the increments between tick marks)
- Comparative graphs must be plotted on the same axes to facilitate comparisons.
- Misplaced zero point. Most people assume that the zero point is at the bottom of the graph. (if not, a very misleading impression of the amount of change present in a data series.)
- Poor chart effects. Shading, 3-D effects, or pictures are often added to liven up a graph. can distort graphs, and provide no new information. Too much contrast – too busy
- Too much precision. \$13,456,234.32. better to present this number as simply \$13 million (i.e. get rid of all the extra digits and use an appropriate scale).

### **Readings:**

#### **Renaissance Thinkers for a Fragmented World- P Fillion**

##### Main Message:

- exponential growth of natural sciences forces fields of science to be more specialized
- due to greater compartmentalization of knowledge, it is harder to generalize findings in compartmentalized subjects of knowledge

##### Lessons learned:

- planners coordinate the various professions and discipline with an impact on the form of the environment
- planners should be the most voraciously read (avoid fixating on narrow perspectives)
- planners need to be up to date with societal trends (economic, environmental, political, social etc)

##### Questions for Planners:

- how specialized does an area of knowledge have to be to the point that planners no longer can apply its findings to improve the urban form

#### **Pages from Dandekar – Communication**

##### Main Message:

- graphics are useful communication tools used to express a multitude of information
- unfortunately, usage of graphics is correlated to an individual's ability and skills

##### Lessons learned:

- graphics are an alternative language, compliments written and oral communication
- graphics (in planning) are used to amplify or interpret a message
- helps synthesize, organize and condense complex situational info (allows for faster understanding with fewer mistakes)
- graphics transcend language barriers, along with: class, education and interest
- graphics provide another perspective

#### Questions for Planners:

- how specialized does an area of knowledge have to be to the point that planners no longer can apply its findings to improve the urban form

#### Dandekar - Analytical methods in planning:

- Data and observations → organised and processed (to filter important information, clearly and make data understandable) → audience and planners
- Analysing important as:
  - informs public
  - clarifies goals and objectives
  - helps compare alternatives for best possible outcomes
  - during the development of new policies
- When choosing method think about level of sophistication and simplicity
- Remember that qualitative and quantitative data are complimentary
- Things to consider:
  - Space, scale, boundaries
    - Space: important when making spatial connections
    - Scale: If inappropriate, may not be able to see variation (bias created)
    - Boundaries: Think about how to determine (political, social economics). Often secondary sources of info limit boundaries. Incorrect boundaries can lead to incorrect analysis
  - Precision, Accuracy, Validity and Reliability
    - quality of data important as:
      - determines level of analysis
      - public scrutiny
    - Precision: how well instruments are calibrated
    - Accuracy: without systematic bias
    - Validity: if data measures phenomena it is supposed to be measuring
    - Reliability: Since data often from secondary sources, think about data definitions, if data collection methods have changed
  - Levels of measurement:
    - Nominal: Names as labels, each category is mutually exclusive
    - Ordinal: Ranked/rated, discrete, can be weakly or strongly correlated
    - Interval/Ratio: continuous data

### **Information Pyramid:**

Data- facts with no relations, patterns or principles  
basis for our decision making

Information- who, what, when, where (gives meaning)

Knowledge- how to. inspire our heads. application of information.

Understanding- answers the question why

Wisdom- what is the best option? Doing the rights things. what should be done.

### **3 approaches to collect data**

1. By observation of both human and animal world and examination of the physical realm (natural & built)
  - emphasize importance of visual and site exploration (qualitative)
  - associated exclusively with primary data collection
2. Surveys/ questionnaires and carrying out recorded interviews
  - both quantitative and qualitative
  - associated exclusively with primary data collection
3. Creative examination of existing records and the use of forecasting
  - involves use of existing records collected from primary data for a purpose different from the current one
  - and example: The Canadian Census

Motivating Questions for data:

What kind of data/information does a planner/topic need?

How should they weigh and choose among the alternative forms in which it is available?

- Which variables- how to measure- scale (space and time)?
- How do we measure income?

What methods should be used to acquire such information?

### **Survey Methods:**

context- few planning issues can be completely assessed on secondary data sources

survey methods- a form of quantitative primary data collection- wide spread use

### **advantages of using survey:**

1. You have control over data created
2. control what and where you obtain the data
3. more updated/ current information (better than obsolete secondary data)
4. able to generalize findings of small sample to larger population

### **disadvantages of using survey:**

1. resource intensive- time, money, skills
2. complexity of social issues often difficult to capture in survey instrument
3. managing representatives- effort required

### **The census of population**

- Carried out every 5 years – 2011, 2006, 2001, etc..
- Most developed countries – key source of demographic data
- In 2011, the Census questionnaire was delivered to over 13.5 million dwellings to collect information on the entire population of Canada
- 2011 survey no longer mandatory/ no longer random

### **Publications and resources based on census data include:**

- Statistics Canada Analysis Series
- a collection of articles which analyze and present information on the major statistical trends on key issues facing the Canadian population
- Community Profiles
- provide easy access to set categories of census information. If you are looking for a general overview of the demographics of a specific city or region, these are a good place to start

*CANSIM or the Canadian Socio-economic Information Management system is Statistics Canada's key socioeconomic database*

**Socioeconomics:** social impacts associated with economic changes and with which demography is often the base for ( eg: Agriculture, Crime and Justice ,Culture and Leisure, Environment,Ethnic Diversity, Health International Trade,Retail and Wholesale,Travel and Tourism )

### **Positives (use of secondary data sources) –**

- Allow for a rich and readily accessible source of data.
- Cost effective – typically low cost or no cost to acquire the user
  - high cost for government – but an essential infrastructure

### **Negatives (use of secondary data sources) –**

- constrained by the data that is collected (no control)
- do they collect variables that we can work with?
- Geographically constrained to that chosen by those collecting the data

- Challenge – boundaries that don't match up

Week 5- Oct 21/ 23 Demography and Socio-economic information

1. Census Data

- The **2011 Census** was a mandatory questionnaire sent out to all private and collective occupied dwellings.
- It had a final national response rate of 97%.
- The Census enumerated the entire Canadian population and Canadian citizens and landed immigrants who were temporarily outside the country on Census Day.
- Information was collected on demography, family and family composition, dwellings and language.
- Census geography variables ranging from the province to the dissemination area are included in the file.
- The Census file is hierarchical allowing for analysis of 5 distinct levels: persons, census families, economic families, households and dwellings. (look at glossary to unpack that)

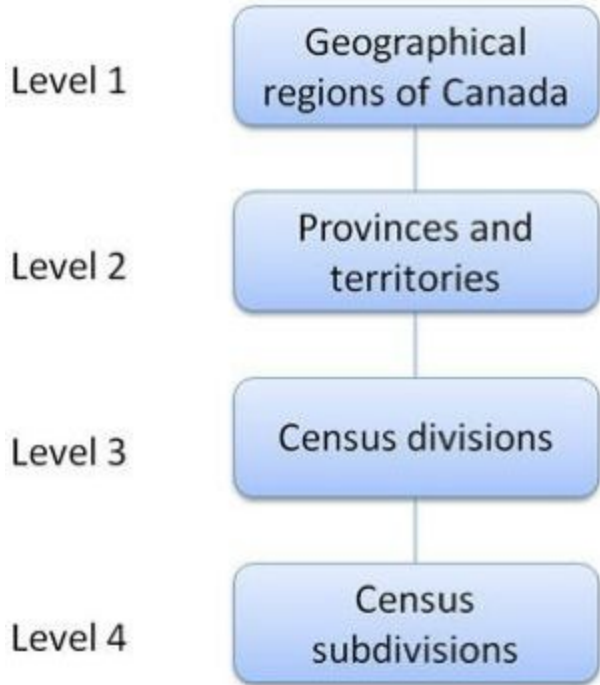
2. The **2011 National Household Survey (NHS)** was a voluntary questionnaire which replaced the former mandatory (e.g. 2006) Census long-form questionnaire.

- The sample frame was one-third of all Canadian households and achieved a response rate of 69%. (bias as only those who wanted to fill it out did)
- The NHS collected information from households on a wide range of topics including labour market activities, education, income, dwellings, place of birth and immigration, Aboriginal populations, ethnicity and visible minority status, journey to work, religion, activity limitations, and mobility.
- Like the Census, the 2011 NHS master file is hierarchical allowing for analysis of 5 distinct levels

***It is important to note that there is overlap between the 2011 Census and NHS master files in that all of the variables contained in the Census (demography, family and family composition, dwelling and language) are also available in the NHS.***

Who?	Why?
Businesses and governments	when developing plans and policies
School boards and communities	in indicating the number of children in certain age groups when planning new schools

Government departments	must know the age trends of the population to plan for pensions, health care, housing, employment programs and child tax credits
Life insurance companies	base their premium tables on age data
New manufacturing, store and offices	locations are largely based on population distribution in different localities
Planners	use census information on households and families to estimate current and future housing needs, transportation demands, hospitals and day-care centres
Manufacturers of household and farm equipment	are guided by census data in deciding what products to manufacture and where to sell them



What level of geography to work with?

- Driven by your question and analysis needs
- Certain variables not available at every geographic level (KEY)

Where to get data from?

- Standard products – geographic aggregation
- Custom products available – (ask the census people who look at individual files and make a custom analysis)

- DLI – Data Liberation Initiative
- Individual level information available at secure sites

**CMA: census metropolitan area**

- used for a large urbanized core together with adjacent urban/rural areas that have a high degree of economic and social integration with that core
- delineated around an urban core having a population of at least 100,000
- once designated as a CMA, it is always a CMA
- each CMA consists of one or more CSDs that meet at least one of the following criteria:
  - the CSD is entirely within the urbanized core
  - at least 50% of the employed labour force living in the CSD works in the urbanized core
  - at least 25% of the employed labour force working in the CSD lives in the core

Other important aggregate data sources from Statistics Canada include Health, Justice, Education, Business, Environment and some customized products.

E.g National Pollution Release Inventory

Not all of these, however, have compatible spatial boundaries with the Census.

Some may make reference to metropolitan areas but not use the Census geo-codes for Census Metropolitan Areas.

**CA: census agglomeration**

- used for an urban region of at least 10,000 people
- each CA includes one or more CSDs that meet the same criteria as those for CMA
- if the population drops below 10,000, that CA is eliminated from the CA program

**CT: census tract**

- smaller census divisions that form the CSDs in large urban-centered regions
- they are defined using the following criteria
  - has easily recognizable borders
  - has a population of 2,500-8,000, with a preferred average of 4,000
  - with greatest possible social economic homogeneity
  - has a compact shape
  - in many cases, a CT is equivalent to a neighbourhood or community

**DA (dissemination area)**

- smallest census geography, for which census data are disseminated. It is a new census geography, replacing the enumeration area (EA) as a basic unit for dissemination.
- composed of one or more blocks. They are uniform in terms of population size, targeted from 400 to 700 persons to avoid data suppression.

- DA boundaries respect the boundaries of CSDs and CTs. They mainly follow roads, but may follow other features (such as railways, water features, power transmission lines)
- A DA within a DA is formed when the population of apartment or townhouse complexes meets or exceeds 300 persons.

## **Newbold Scott 2012**

### Main Message:

- discusses the long commute times of Canadians in the Toronto census metropolitan area
- greenbelt around GGH maybe causing longer commute times
- one factor causing long commute times is the migration of people from inner GGH ring to outer GGH ring
- another factor affecting long commute times is long migrations

### Lessons learned:

- the Greenbelt legislation may be a cause for longer commute times for an automobile dependent urban form
  - but building a transit oriented urban form will greatly mitigate this problem
- Metrolinx's big move is developing a way to connect municipalities in a region via transit

### Questions for Planners:

- a way to transport goods through municipalities is needed

## **Boom Bust and Echo**

### Main Message:

- highlights the importance of demography, being able to predict future trends (forecasting)
- age composition is a commonly used forecasting tool because it is guaranteed to change
- knowing demography can assist industries in predicting upcoming trends for products/ crimes/ values etc

### Lessons learned:

- demography is extremely important, but the lack of knowledge of it stems from its simple and straightforward answers
- Canada's demographic is unique (massive baby boom)
- analysing the demography of generations (boom, bust, babyboom echo) able to determine future social and economic behaviour
- demography can be used to predict which industries will be the most lucrative in the future (cosmetics is somewhat constant, as ppl get older, they want to look younger)

## Week 7: Nov 4/ 6 Forecasting & Demography

### Forecasting and Demography

What makes planners want to forecast?

What do planners forecast?

Why is forecasting such a key in planning concepts?

What are the different approaches to forecasting?

Forecasting:

- Translating experiences of the past into estimates for the future
- The further into the future the forecast, the greater the uncertainty around the estimates

Forecasting Horizons:

- Long term- more than 2 yrs
- Mid term- 3 months to 2 yrs
- Short term- 0 to 3 months

KEY: the best ideas about the future are based on the past

Methods of Forecasting: mixture of art & science

- Analytical approaches tempered by uncertainty (the 'art')
- Often done by fitting models of behaviour (data) of the past  
Byronnnn, check fb
  - criticism: does it make sense to apply models moving forward (yes? u suck at spelling)
    - mixture of qualitative & quantitative approaches
    - based on educated opinions of appropriate persons

Qualitative Approaches to Forecasting:

1. Delphi Method
  - forecast is developed by a panel of experts
  - experts anonymously answer series of questions
  - responses are fed back to panel
  - members may want to change their original responses

Evaluation: very time consuming & expensive | new groupware makes processes much more feasible
2. Market Research: panels, questionnaires, test markets, surveys  
Evaluation: wisdom of the masses | more prediction than forecasting
3. Product Lifecycle analogy: forecasts based on life cycles related to the product, service or process
  - based on the assumption that life cycle is regular and predictable
4. Expert Judgement by management, sales force, knowledgeable persons

- beyond the analysis of data, (opinion influenced)

## Quantitative Approaches

### Time series forecasting method

- based on analysis of historical data
- time series: a set of observations measured at successive times or over successive periods
- makes the assumption that past patterns in data can be used to forecast future data points

### Demographic Forecasting

1. Growth models
  - Analyze historical trends in population changes
  - extrapolates trends into the future
  - Fit a line
  - line can represent a mathematical function to the historical data
2. Regression Based Forecasts
  - Regression is a statistical approach that has broad utility
  - Regression: mathematical equation relates a response variable to one or more explanatory variables that are believed to influence the response variable
  - Goal is to quantify the relationship between the 2 variables
  - AND can be used for prediction -- how does variable y “respond” to changes in variable “x”

## Week 8: Nov 11/13 Technological Approaches and the Urban Environment

### Boom, bust and echo:

- debates on urban uses reflect demographics
- planning has less impact on the way our cities develop than composition of population
- demographics explain ⅔ of everything
- last 2 decades
  - use of suburbs
  - decline of transit
  - BOTH are due to aging population

### Predictions:

- huge savings would be available if a ... compact form of development were adopted in the future (attempted with green belt)
- the pressure for suburban growth should subside in the years to come (3X more growth in suburbs than cities)
- what are the suburbs
- new family formations will continue to slow down rates of birth and city growth
- late 1990's will be an excellent time to build new roads paid for by user tolls (push towards public transit)
- increasing number of people will flee from big cities for:
  - a quieter life

- less expensive way of life
- more transit= increased quality of life in cities
- time conscious age population will be willing to pay for better service (local shopping>big-box retailers)
- crime rate will drop as baby boom criminals move out of violent years

#### Quantitative methods

- regression- to quantify the relationships between 2 factors
- response (variable responding[Y]) and explanatory (creating influence[X])
- line of best fit (unique solution)
- strength of relation-- always variation
- R<sup>2</sup>- strengths of association (0-1)
- ^100- percentage
- indicates how well line fits the data points

#### Readings:

##### Assessing population projection methods in Ontario:

- Population projection methods are different at the local, regional, provincial and national scale due to
  - Different decisions needed to be made
  - Different population sizes
  - Different levels of human and monetary resources
- Often larger the scale, more time consuming complex, expensive and accurate projects are
- Population projections needed for:
  - to inform decision makers of future needs
  - needed for private developers
- Projections at the local scale
  - Projections important as many see opposite trends and are thus vulnerable to challenges
  - However, in Canada, are often left out due to resource constraints, and are developer driven
  - Current often lack migratory component, based on projections from larger geographical jurisdictions
- Mismatch between population projections and reality:
  - Waterloo: there is 20% less growth than projected; implications on expenditure on transit, sewage infrastructure etc
  - Education system:
    - in 1971-1991, number of educators increased while school aged population decreased
    - Government opened many elementary schools for baby boom population, now as age has passed, many have to shut down

- Methods of population projection:
  - Linear: very simple, used only when data is limited
  - Parabolic: not good for long term projections, for good to show rapid change
  - Housing Units: project based on demand for housing
  - Share Capture: share of the region's population x growth of area
  - Cohort model: uses fertility, mortality, migration trends for different ages and genders
- Current methods for different areas:
  - For large scale: Cohort method
  - Waterloo: cohort method
  - Belleville: linear and parabolic method
  - London: Share Capture
  - North Bay: Housing Units
- Conclusion as to best method for small areas: Share capture method
  - Inexpensive timely
  - no primary data needed, can use statistics from larger national databases

## Week 9: Nov 18/20 Spatial fundamentals

### Demography:

- demographers attempt to improve their projections
- However they can't always predict exactly (due to technological and birth rate changes).
- Thus there is greatest uncertainty around the first and last cohort
- Both the population and its structure are important (eg Dependency ratio)

### Immigration

- Contentious as: In the long term needed to maintain labour force, but in the short term take jobs (as they needed just yet?)
- Regionally uneven: however, now, immigration is more spread out across Canada

### Internal Migration: hard to forecast

- What draws people to migrate? Education, jobs, love, property costs, attraction of large cities, old people
- Added Challenge for planners:
  - growth coordinates with economic development (thus need growth)
  - But often people live in one place, work in another
- Age group that moves the most: 25-39 yr olds

### Demographics and Housing:

- as family compositions change, housing needs change too
- Single person living is increasing

### Growth Plan:

- Ontario: Places to Grow Act 2006
- Growth Plan for the Greater Golden Horseshoe
- Overview:
  - Core Idea: accommodating expected growth in population and employment in the Greater Golden Horseshoe – to 2031
    - In a coordinated and strategic way
    - Balancing the needs of economy and environment
    - Directing growth and infra investment ( eg: protecting agricultural land)
  - This is a Provincial Act that Municipal Official Plans must conform to (legal requirement)
- Greater Golden Horseshoe:
  - Covers 110 municipalities
  - 70% of Ontario's GDP
  - One of the fastest growing areas in North America
- The plan:
  - create complete, compact communities,
  - Revitalize downtowns
  - provide more housing options (vs suburban housing)
  - protect farmland and natural areas
  - reduce gridlock by improving transportation options
  - make more efficient use of infrastructure and urban land
- Other Characteristics (“Smart growth” principles):
  - Intensification of existing built areas through established density targets (50 people/jobs per hectare)
    - more greenfield and brownfield development
  - Mixed use, transit supportive development

### Related Acts:

- Greenbelt Act: mandatory growth boundary
  - limiting new suburban developments (new ways to develop and accommodate growth)
  - In the Region of Waterloo: conflict between developers and municipality on how much green field development is needed
- Metrolinx
  - Focus on people moving: Regional Transit plans
  - Focus on economy (moving goods): New highway corridors

### Impacts of Growth Plan:

- ⅓ more green space would be urbanised without the plan
- ½ the development will take place in built up areas (¼ without plan)
- Urban densities to go up by 20%
- Lower number of auto trips, distance travelled, and increase in GHG than is no plan

- traffic delays lesser than if no plan

#### Implementation challenges:

- Each municipality must conform to the intensification targets in their growth areas
- Prepared to absorb growth by meeting density targets in existing and new areas
  - Limit greenfield development (sprawl)
  - Within existing boundaries (Greenbelt).
- Limiting new suburban developments = new ways to develop and accommodate growth
  - Challenges for residential (infill)
  - Challenges for employment
- Example: Regional Official Plan for Waterloo
  - Approved by council 2010 – fixed borders, growth within existing built area
  - 80 ha land budgeted for greenfield residential development
  - Developers appealed to OMB 1053 ha; were granted
  - Backlash: Provincial level said OMB decision against region's vision
  - Mediated settlement: 455 ha
  - Highlights the importance of methodology to forecast future demands for land (different predictions → different land demands)

#### Role of Forecasts:

- Population and job forecasts are pivotal to the intensification target setting, local policies and pace and location of development
- Forecasts Reviewed every 5 years – Amendment 2 - 2012
- Based on the Places to grow act, forecasting based on population, distribution, employment and employment distribution
- Forecasts based on Ministry of Finance annual effort (Fertility, mortality, immigration, emigration, inter-provincial migration)
- Changes in Amendment 2 driven by limits in community capacity to absorb growth (they adjusted forecasts based on locality)
  - Environmental and infrastructure capacity
  - Local limitations such as water supply, sewage capacity

#### Moving Forward:

- Forecasts – demography – critical to planning
  - And forecasts are always wrong
  - but can still get close, and are valuable
- With Province – Growth Plans still source of controversy
  - Many municipalities appealing to OMB
  - 60% adopted amendments to their official plan
- Definite strides to implementing “smart growth”
  - But challenges remain (see Waterloo Region and LRT)

#### Ways to establish “location”

- relative proximity to known features (landmarks, intersections)

- within a jurisdiction
- socially constructed spaces or region
- absolute location
  - Coordinates; Lat.Long or UTM
  - Address; transportation network
  - geo-referencing

Why we need to establish location:

- Planning definition “making of place, mediating of space”
  - everything in planning relates to location
  - to analyse patterns of movement
- Uses of location:
  - Resources – topography in wastewater planning
  - Navigation
  - Shipping
  - Remote sensing
  - location based services

Spatial: refers to “location” or the arrangement of things in space

- Definition: relating to, occupying, or having the character of space
- Geography: a spatial science that studies that spatial distribution of natural and human phenomena
- Geo-referencing: contains geography

Geographic Information Systems (GIS): “word processor” for spatial data

- Broad definition: A facility for preparing, presenting, and interpreting facts that pertain to the earth's surface (people, maps, computer system)
- Narrow (more common) definition: An automated or computer based system for the input, storage, manipulation, analysis, retrieval and display of spatially (geo-referenced) information and data
- What all can GIS do: Image processing (remote sensing images), database management systems (measurement of observations), statistical analysis, mapping graphics, spatial analysis modelling simulations, digitizing/scanning maps
- Other related softwares (Related to “spatial data”; GIS emphasises mapping and analysis of spatial data)
  - LIS- Land Information System (Cadastral systems specialized for property ownership and management)
  - AM/FM- Automated Mapping/Facilities Management
  - GIS-T- GIS with a Transportation Focus
  - CAD Computer Automated Design

Map: a collection of facts about objects organized according to location

- Paper maps vs digital maps: static vs dynamic
- think about the nature of data that drives technology (eg GPS, celphones)
- Fact (data) vs information: individual interpretation of the facts leads to information

- Example: Lines of map representing road networks: facts; finding route from A → B using the lines: Information
- Cartographers create maps with spatial facts (locations of features), our cognitive abilities determine how much information we can derive from the map

## Readings:

### Ontario moves to speed up process for closing schools

#### Main Message:

- due to the difference between population of generations (bust vs echo), less children, schools are not fully utilized
- schools that are less than two thirds full are defined “underutilized”
- closure of schools can also have an impact on the community (residential infrastructure value)

#### Lessons learned:

- Education ministry unveiled new guidelines that made it easier to close schools down
- closing schools down requires public meetings and review conduction and the times for both of those processes have been minimized to speed up closure of schools
- schools and municipal boards should work together to make better use of school spaces
- everybody wants the schools to stay open, but no one wants to pay for it

### 500M dollar plan to rebuild ontario schools

#### Main Message:

- schools should be encouraged to be used as a community hub than an exclusive place for education
- schools attract people to move in to the community
- lack of affordable recreation programs (difficult to get children interested in)— a new school is a new way of providing a facility for recreation programs (mixed use)

### BoomBE chpt7

#### Main Message:

- the effects of demography has a huge impact on city cores
- baby boom generation made the inner city core liveable with high demand, but also made the prices of downtown residences too expensive for late babyboomers
- caused front end boomers (who can afford downtown living) to go out to suburbs (family raising)
- failures of a city is sourced from lack of density which originates with the baby boomers settling in the outer suburbs of city
- aging of baby boomers = in the rapid growth of sprawl (failure to implement public transit)
- ideas are generators of growth and wealth creation
- best idea production stems from like minded people working together (optimal to do that in large densely populated urban areas)

- there will be another wave of youthful energy in cities when echo generation ages flooding the city core

#### Lessons Learned:

- toronto's healthy urban core is due to: wise political decisions to retain the old established neighborhoods in combination with demographics
  - front end boomers (wanted to be at the centre of action) supported preservation policy and millions were used to revitalize and modernize old houses ensuring long term viability
- detroit's dangerous urban core is due to lack of:
  - residences of a variety of income levels
  - a good transportation system
  - full array of entertainment
  - cultural, educational and shopping facilities
- rapid population growth in suburbs= less dense area
- less dense area= inability to implement public transit
- inability to implement public transit= long commute times (heavy congestion on highways/ high GHG emissions)
- attempts to move public transit into suburbs, but requires the reduction of services in a place with high ridership to a place of low ridership, suburbs (profit of suburbs public transit is not enough to compensate loss of profit for public transit in core)
- young boomers (19) have little money and lots of time, therefore can spare time to wait for public transit (in 1960- public transit had a lot of riders due to boomers)
  - however, working boomers have less time and more money to afford a car (more convenient)

#### Week 10

#### Nature of Data:

- Attribute (characteristics, variables)
- Temporal (date, time)
- Spatial (location)

Data Model: The set of rules used to create a digital representation of information, in the form of discrete entities and the relationships between them.

- Types of spatial data models
  - Field Class: maps conceptualized as a series of layers or fields
    - Raster or vector
    - finite number of variables
    - each variable mapped over the area covered by the database
    - "space exhaustive" - every part of the "study area" is referenced, even if it is "blank" or not of interest
    - each variable has a unique value at every point in the area
    - implies no duplicate records for a spatial feature
  - Object class

## GIS and information representation

- Raster view (categorising parts)
  - good for looking at large spaces of surfaces
  - Challenge:
    - Storage becomes an issue
    - Splitting the resolution doesn't let us define key infrastructure
- Vector view (drawing out boundaries and features)
  - good for looking at cities

## Criteria for establishing a fully functional GIS:

### 1) In vector systems, the ability to store and analyze spatial relationships between objects (A.K.A. Topology)

- Defines the spatial relationship between objects in a non-metric way
- METRIC - use of specific coordinate systems to reference spatial objects in terms of absolute location
- Topologic properties do not change with a change in metric i.e. projection and transformation ( e.g. Ontario is always adjacent to Quebec)

### 2) Ability to store and analyze an unlimited number of attributes of each feature

- E.g. feature = neighbourhood
- Attributes = avg. income, age profile, avg. age of dwelling, average house price, employment characteristics, school profile etc. etc..

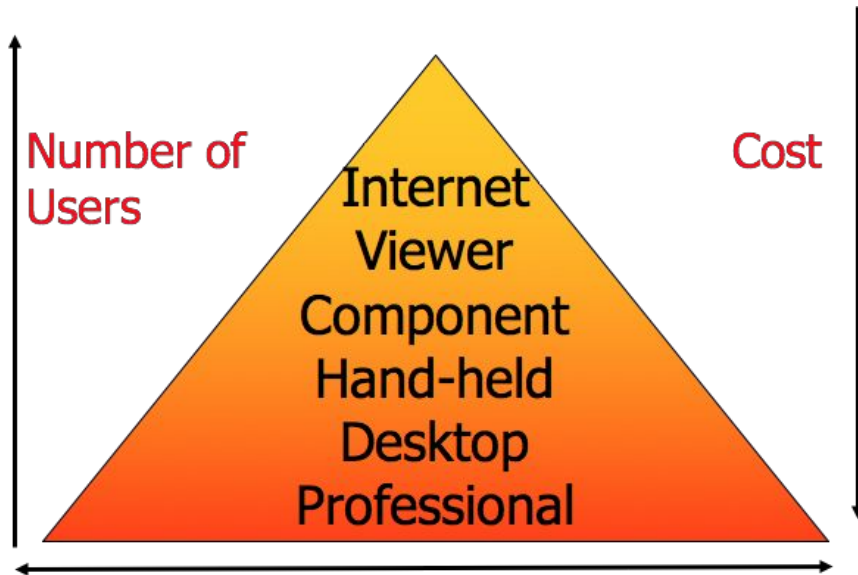
### 3) An emphasis on analysis rather than simple data management and retrieval

- e.g. Where is the most suitable area for....
- Why does this area exhibit strong growth...
- How should we determine the trail usage and design...

### 4) Ability to integrate data from different sources, at different scales, and using more than one mode of representation

- Different sources: data from RS, GPS, government, non-government sources
- Mode: Example: is a street intersection 2 lines, a point or a polygon or can it be all 3?

## GIS Software Classification:



## Week 11:

Exploring applications of GIS

- Is a technology searching for problems to solve
- Initial problem: expensive

### 1. Mapping:

- Automated Cartography - "Computerized Mapping"
- Critical aspect of communicating spatial information and analysis

### 2. Management (where is what?)

- Structured Query Language (SQL)
- Where are the problem intersections?
- Where are the steepest slopes?
- Where are the neighbourhoods most in need ?

### 3. Temporal (Where has it changed?)

- important information for policies or plans
- Spatial-temporal domain (remember there are 3 data dimensions: SPACE, TIME, THEME )
  - Where is the City growing?
  - Where has the increase in complaints occurred?
  - Where is the density of population changing?

### 4. What relationships exist?

- Deriving new information leveraging spatial. information
- e.g. How long does it take to travel from City A to City B?
- What land use types are adjacent to the park?

#### 5. Where is it best?

- Suitability analysis – best location (Weighting criteria and providing a composite view)
- Where should we build the new recreation centre?

#### 6. What affects what?

- Exploring cause and effect relationships within a GIS
- Relies on empirical relationships
- e.g. relationship between climate, building characteristics, situation, and energy consumption

#### 7. What if....? (Dawn Parker and others)

- Exploring alternatives in a predictive sense (scenario analysis)
- choosing the path for a new LRT, bike path, etc
- determining alternative development plans
- What if – population increases/decreases, costs increases, climate becomes drier

### **Readings:**

#### Examples of GIS use for ESRI:

- GIS is a technical tool for comprehending geography and making intelligent decisions
  - Adds layers to maps
  - Is interactive: you can select what you want to see, adjust scale
  - a tool for visualisation, modeling, analysis & collaboration
  - allows for Multiple criteria evaluation (to suggest and rank alternatives)
- Illinois, Urbana Champaign:
  - Wanted to find locations for low density residential projects
  - Use GIS to find locations from both a developers, and and environmental view (different priorities, thus different suitable locations)
- Singapore:
  - Due to its small size, there is a need to plan land use for growth
  - Its “Urban Redevelopment Authority” uses GIS to help make decision about, and increase participation in its “Concept Map” for the City.
- Slums in Venezuela:
  - GIS can be used to show relationships in slums of geography of physical features (elevation), social groups and public priorities (eg water sources)
  - In Venezuela, planner use GIS to understand how squatter settlements are organised, and thus how to improve their efficiency
  - GIS allowed them to increase public participation (by visualising solutions)

## Dandekar: Planning and Computers

- Computers allow planners to control and access large amounts of information fast
- This is a very new development due to the rapid development of technology that has led to smaller and faster computers
- How computers help:
  - Computation
  - Data Storage and information management:
    - The organisation and manipulation for data for easy use if a critical function
    - Creates a more efficient work environment
  - Presentation: For the analysis and communication of information
    - Complex process → simple pictures
    - for creating and amending graphics
    - to create maps and analyse spatial information
  - Distribution of public information: to increase accountability, transparency and public participation
    - Active participation: allows one to see progress, different scenarios
    - Passive participation: for general information
- Design of computing systems: determined by requirements of planning unit
  - Must differentiate between needs and wants
  - Different models: Stand alone model/ peer-peer network/ client-server model
- Computer Applications: Word processing, spreadsheets, databases (eg Access), desktop publishing, email & the internet, GIS
- GIS: while effective, also expensive, requires trained employees, needs data to be digitised. Thus not always appropriate.
  - Combines spatial and non spatial data
  - Raster (grid input, each grid only one value), Vector (used lines, points, polygons). The latter allows for more analysis
  - Differencing between cartography (making of maps) and spatial analysis
- Ethical and social issues:
  - Privacy is limited for employees on the computer
  - Distribution of computers is unequal both between organisations and them public (due to expense/income levels and disabilities)
- Conclusion:
  - computers are powerful tools that increase efficiency, but must be well incorporates
  - “ Let planning dictate your use of computers, not the other way around”

## Week 12: Introduction to Evaluation

### Knowledge of Evaluation so far...:

- judgement based on criteria
- examine effectiveness, limitations and assumptions
- examples: audits, creditworthiness, medical evaluation, stores (online), work related performance evaluations, school tests & exams

Evaluation: Systematic determination of merit & significance of something or someone using criteria against a set standard

determination: acquire data, access the information

merit: performance against a standard

Formative Evaluation: intends to strengthen/ improve thing being evaluated (process oriented, efficiency focus)

Summative Evaluation: in contrast, examines outcome/ effect of a given thing (determined if the thing has an impact/ effect)

Types of Planning evaluation:

- planning assessment
- plan testing and evaluation
- plan critique
- comparative research & professional evaluation
- post hoc evaluation of plan outcomes

Monitoring: collection & analysis of information that can affect performance

Indicators:

- provide quantitative/ qualitative information
- demonstrates trends & patterns
- evidence required to support evaluation
- example- carbon emissions from cars (measures VS no measures)

Formative Evaluation:

- examining the delivery of the program
- examining the quality of implementation
- assessing the organizational context, personnel & procedures
- process refinement tool
- designed to give feedback to administrators
- conducted early in implementation process
  - who is involved in developing an official plan

Planning approval of Formative Evaluation:

- developer has a piece of land
- developer decides to get the property developed
  - a proposal is then submitted to the government
  - takes 18 months for the proposal to go through

Formative Evaluation:

Needs Assessment

- determines who needs the program

- how great the need is
- what might work to meet the need

#### Evaluability Assessment

- determines whether an evaluation is feasible
- how stakeholders can help shape its usefulness

#### Structure Conceptualization

- stakeholders define what they like
- define possible outcomes

Implementation Evaluation: monitors fidelity of the program/ technology delivery

#### Process Evaluation:

- investigates the process of delivery
- includes alternative delivery procedures

#### Summative Evaluation:

- describing what happens after delivery of program
- objectively demonstrates if goals have been met
- determining associated causal effects
  - determining causality is challenging
- estimating the relative cost

#### types:

- outcome evaluations
  - investigate if program or technology caused demonstrable effects on specified outcomes
- impact evaluation
  - broad, assess the overall net effects
  - intended or unintended
  - cost-effectiveness and cost-benefit analysis
    - address questions of efficiency
    - standardizing outcomes in terms of their dollar costs and values
  -

#### Selecting Indicators:

- clearly relate to growth plan policies & measure the growth plan targets & results

#### Summative Evaluation types:

- secondary analysis
  - re-examines existing data
  - address new questions
  - use methods not previously employed
- meta-analysis
  - integrates the outcome estimates from multiple studies

- arrive at an overall summary judgement

## Readings:

### Example of Meta-Analysis:

- Study investigated the relationship between the built environment and travel using a meta-analysis approach
- Example of a conclusion drawn: increased land use diversity correlates positively with increase in pedestrians

### Performance Indicators for the Growth plan:

- Indicators needed as guidelines and to measure implementation of plan
- There is 12 indicators in all that cover all four themes of the growth plan
- Most of these indicators have a clear link to the Growth plan, have a methodology developed to measure them, and have established data sources
- Example; To built compact & efficient communities (mixed use, transit oriented)
  - One indicator is that of “Achieving intensification” that measures the % of new residential units in built up areas
  - Target: To have 40% of residential developments in built up areas by 2015, and every year thereafter
  - Result: Many municipalities are achieving or exceeding target well in advance

### Program and Plan Evaluation:

- Evaluation is need to access program viability, impacts, outcomes and suggest alternatives
- Why evaluation is important:
  - Public sector challenges:
    - Demand for services in increasing, while resources are decreasing
    - Increased accountability to the public
    - expectations of greater efficiency
  - Thus they need to maximise benefits from limited fiscal resources
  - Use evaluation to see;
    - How effectively have programs achieved intended goals
    - Monitoring (or continuous evaluation) to see progress → needed to formative evaluation
  - Three main purposes:
    - to increase knowledge
    - to guide program development
    - to provide accountability
- Evolution of program evaluation:
  - Process of Evaluation:

- Science driven: Process scientific, focus on the attainment of objectives
- Program context and stakeholder consultation: Evaluations through value judgements, use contextual (social, political) perspectives
- New Public Management: Influenced by neo-liberal movement, focus on cost-benefit analysis, consumer based
- Empowerment phase: focused on multiple perspectives and interests, valued collaboration
- Use of Evaluation:
  - Instrumental: used to assist decision making
  - conceptual: used to learn improve
  - imposed: used to ensure appropriateness
  - empowerment: used to engage, increase participation