

Regional S/E Forecasting

French Broad River & Wilmington MPO's

NC Model Users' Group

April 26, 2006



MARTIN
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BRYSON

Regional Forecasting Methodology: Tommy Hammer, PhD

Presentation Overview

- Regional Totals
- TAZ Allocation
- Employment

S/E Forecasts (FBRMPO 2000)

- **Top-Down / Bottom-Up**
- Nation → State → Region → Sub-Areas
 - Demographic & employment control totals
 - 5-county region
 - 9 sub-county areas in model
- Local land-use allocation to TAZ's
 - GIS-based suitability model
 - Local staff review

FBRMPO 2000 Process

- National forecast
- 5-county forecast
(Buncombe, Henderson, Madison, Haywood, Transylvania)
 - Linked region's economic drivers with national economy
 - Identified key drivers of the Asheville regional economy
 - Prepared subarea forecasts based on statistical data for 183 metropolitan counties in the Southeastern US.
 - Revised subarea forecasts to allow for factors not covered by the model for southern Buncombe and the Fletcher area.

County Subareas

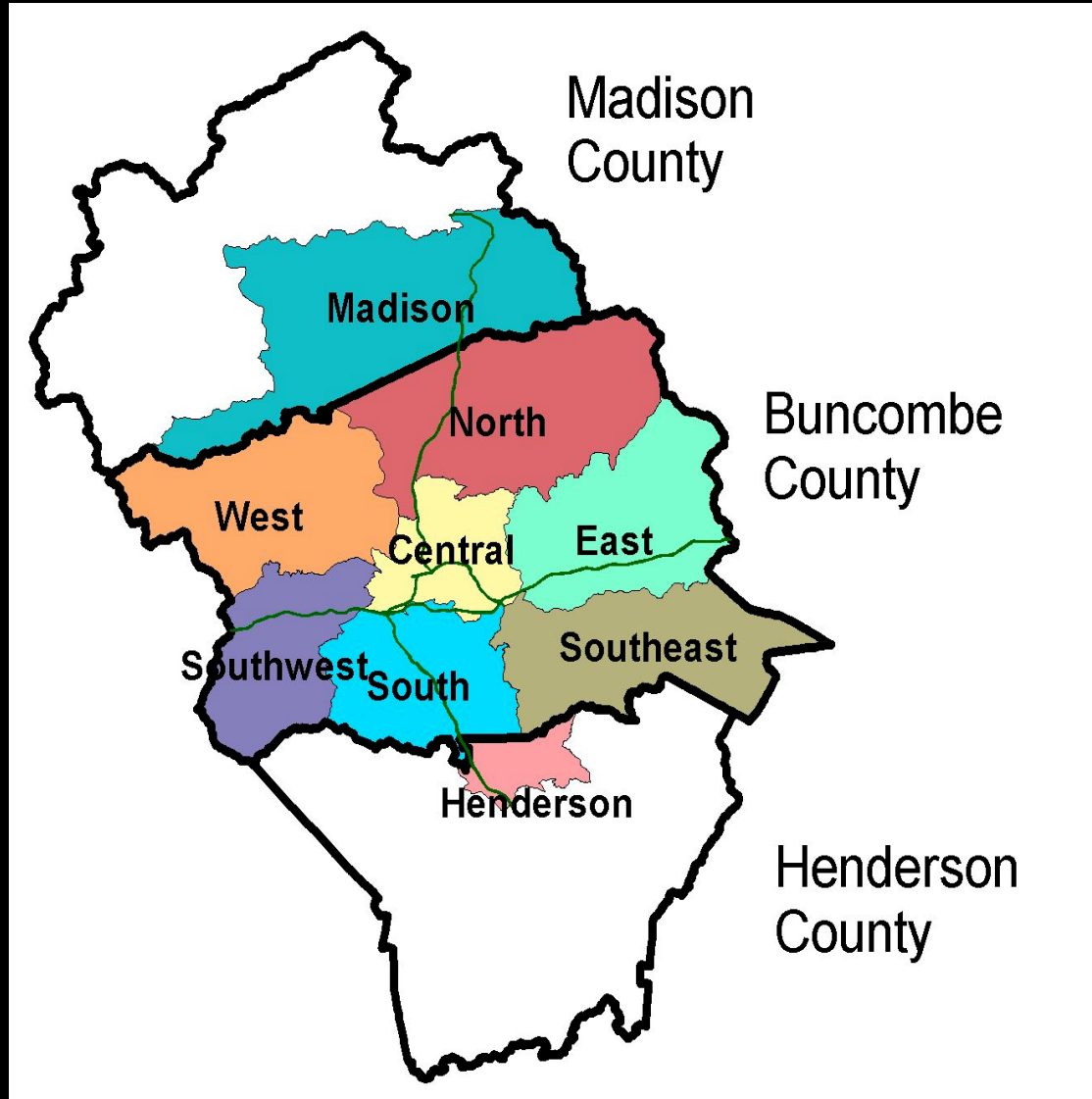


Figure 9. FORECASTING ZONES

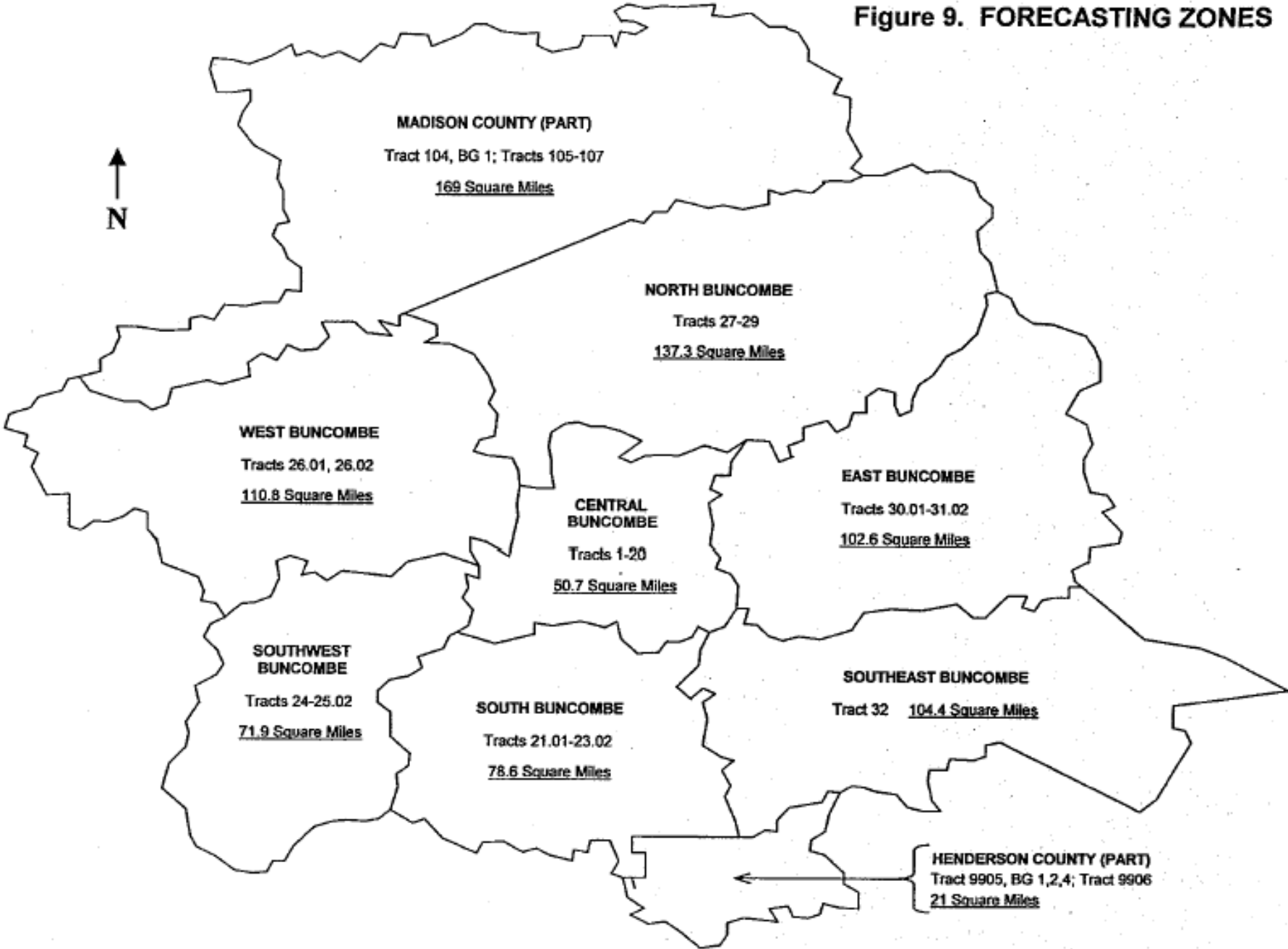


Figure 2. EMPLOYMENT IN THE ASHEVILLE REGION

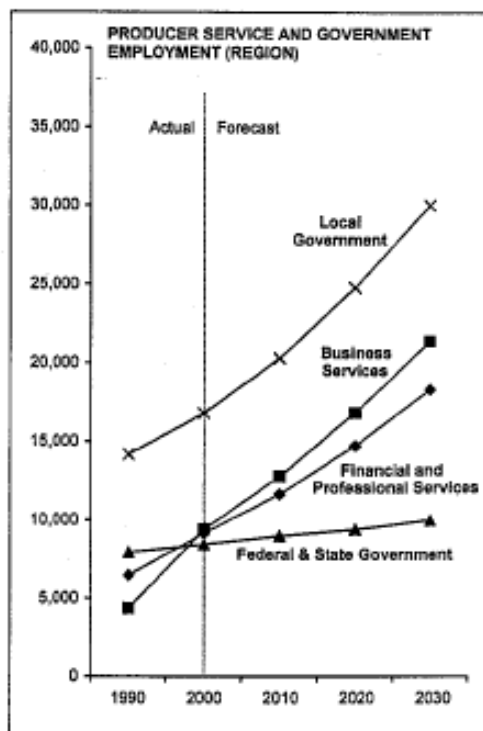
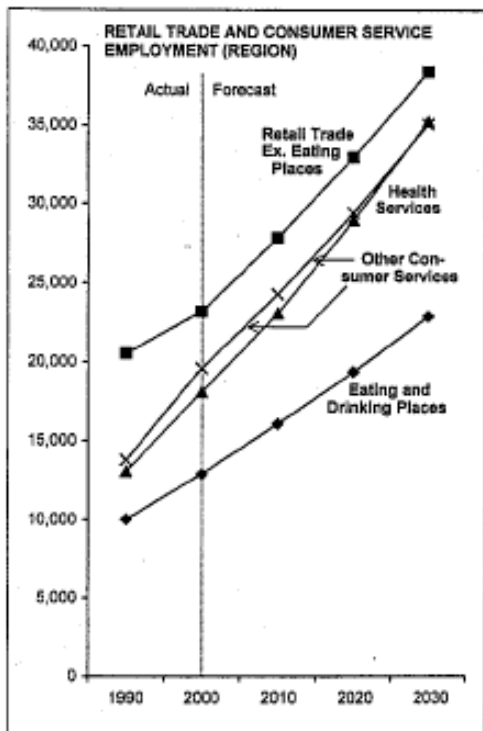
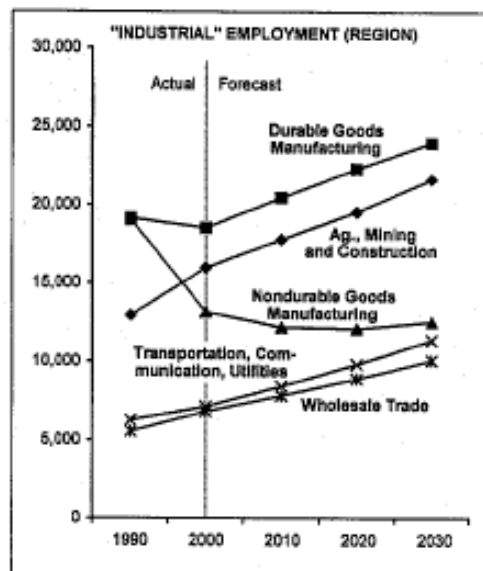
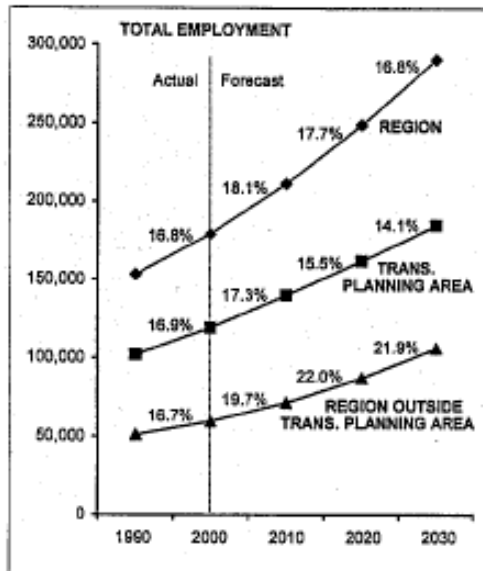


Figure 4. POPULATION AND EMPLOYMENT BY ZONE

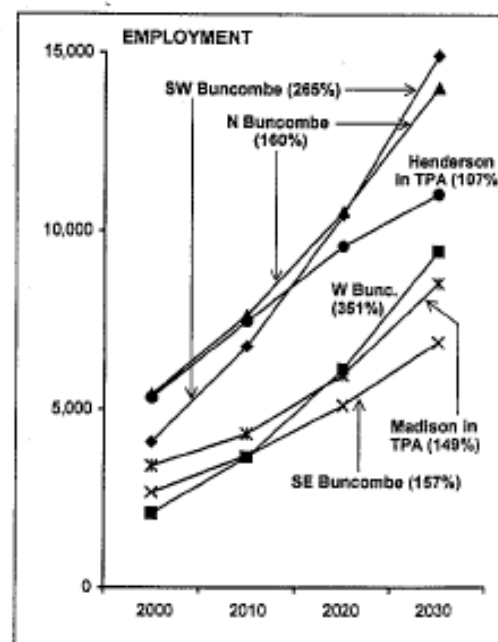
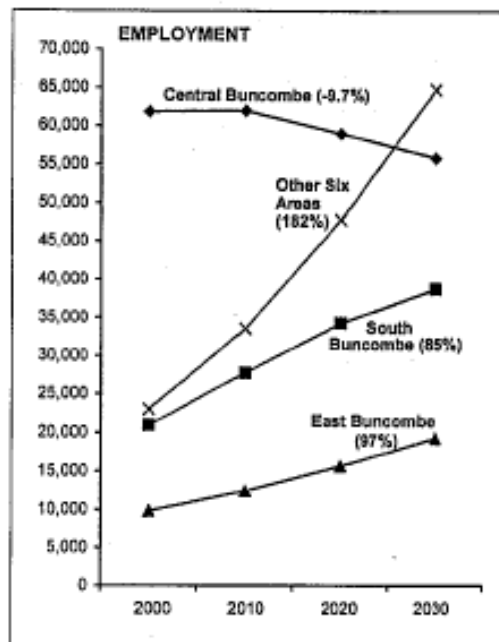
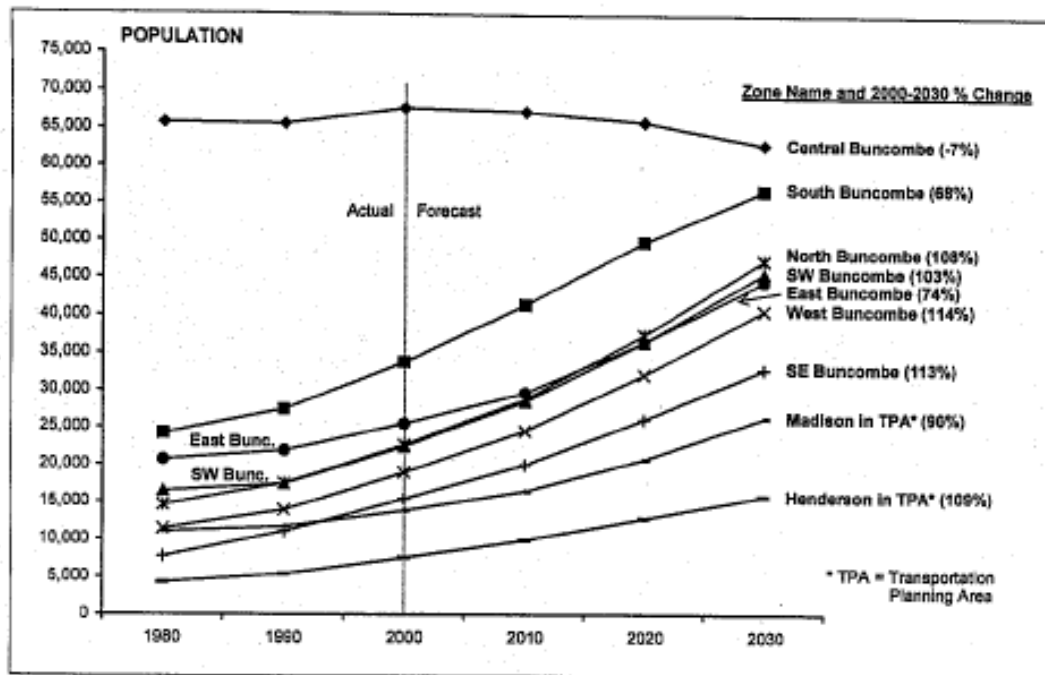
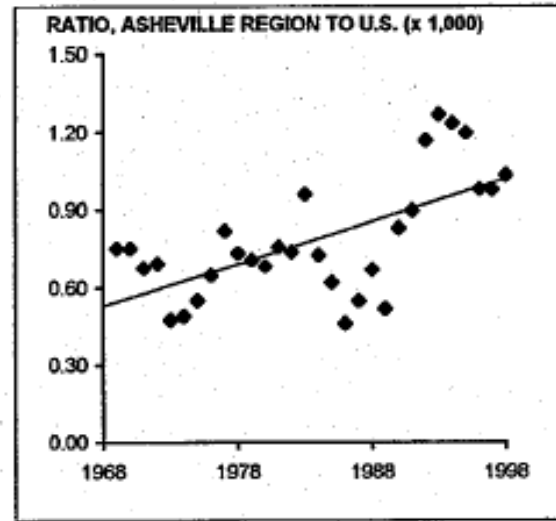
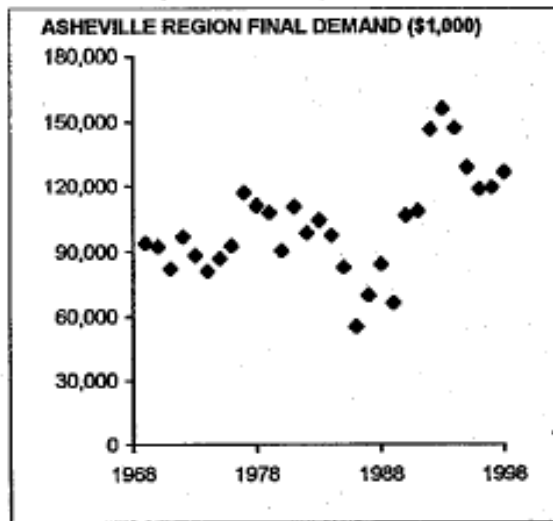
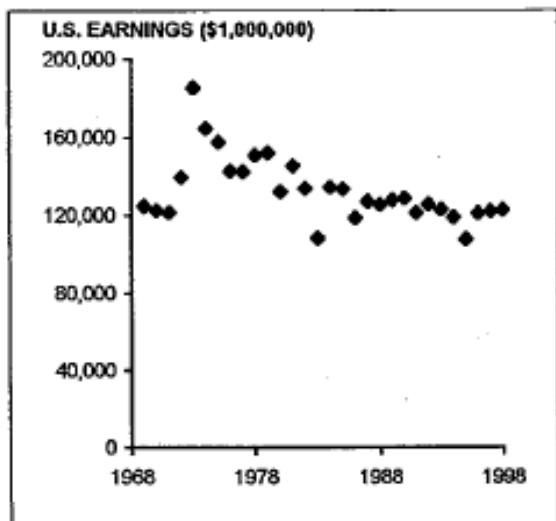


Figure A-1. U.S. EARNINGS VERSUS ASHEVILLE REGION BASIC EARNINGS IN AGRICULTURE, FORESTRY, MINING AND CONSTRUCTION

AGRICULTURE, FORESTRY, FISHERIES & MINING



CONSTRUCTION

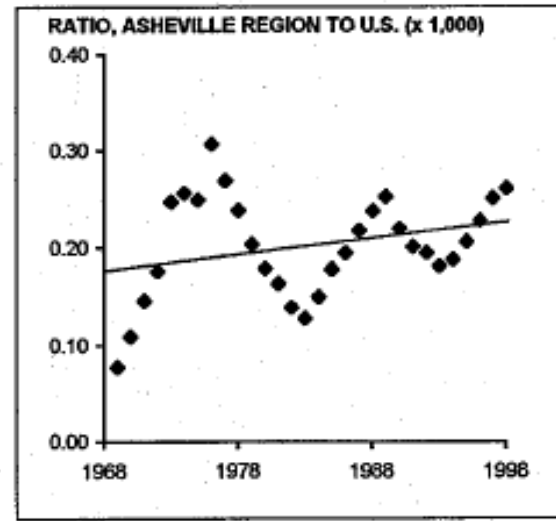
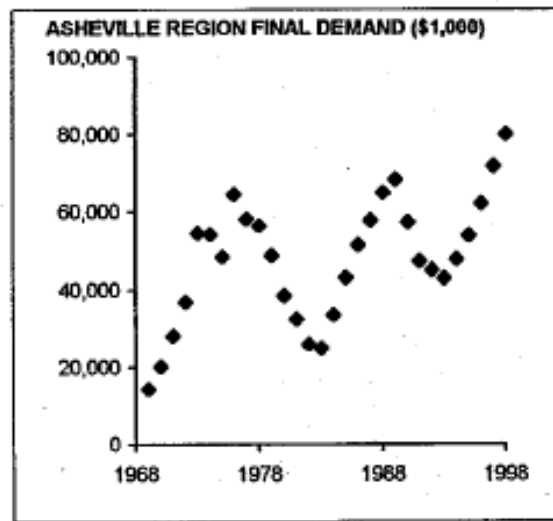
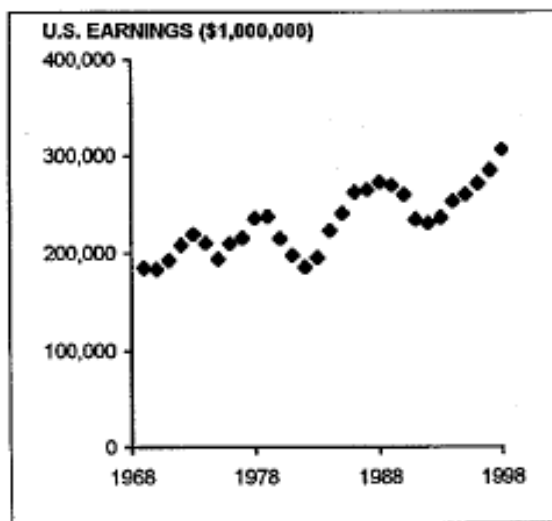
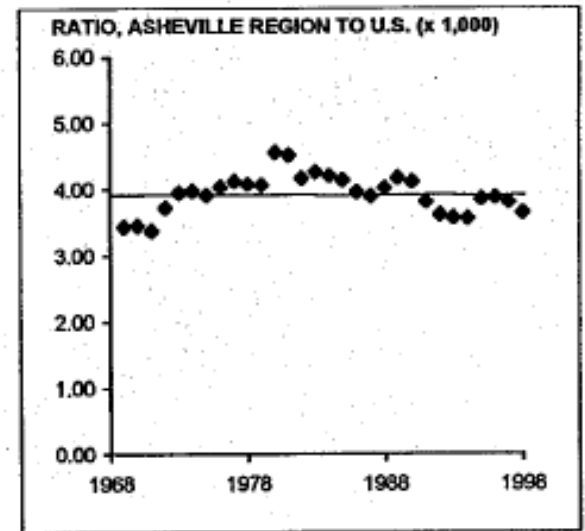
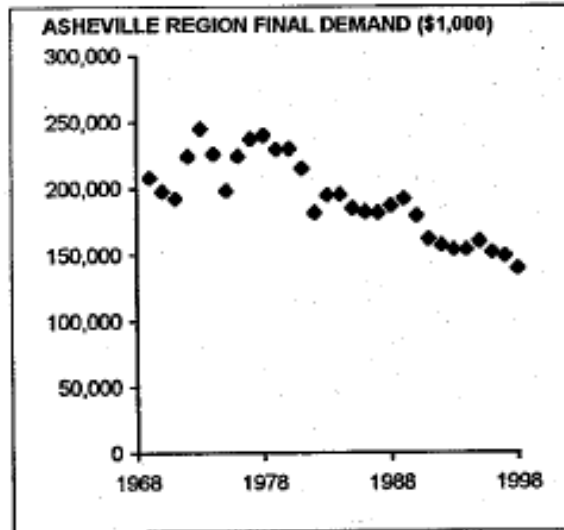
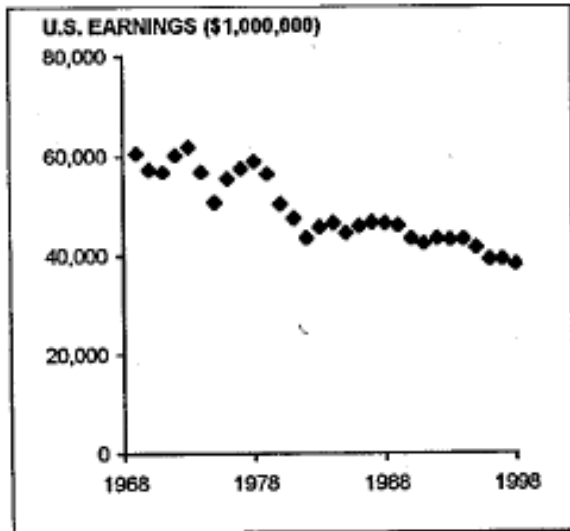
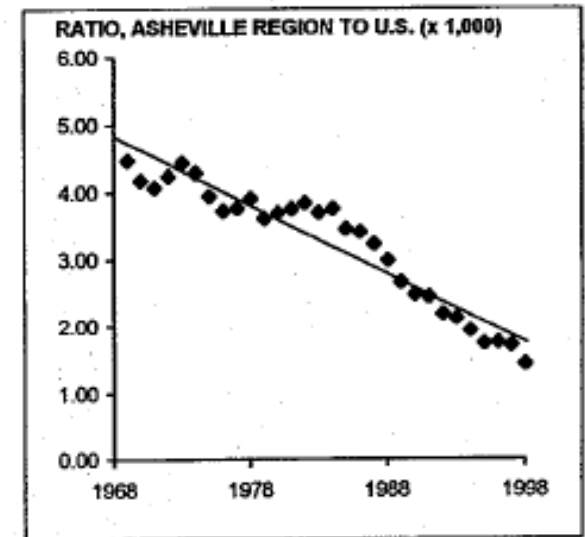
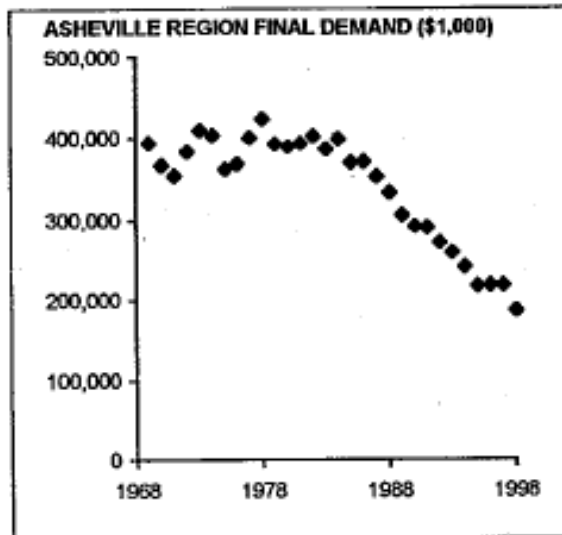
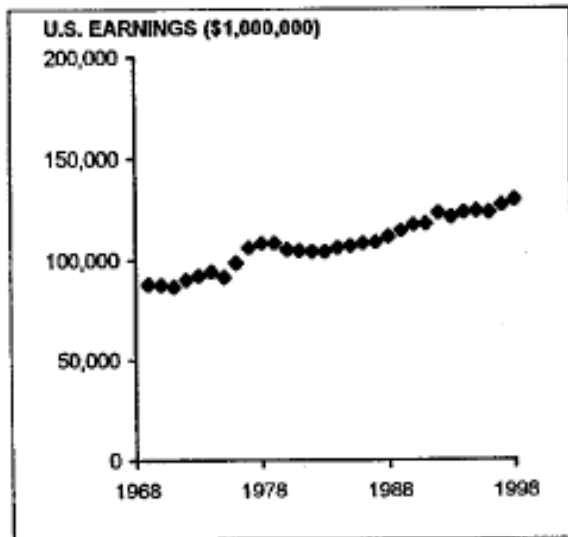


Figure A-2. U.S. EARNINGS VERSUS ASHEVILLE REGION BASIC EARNINGS IN APPAREL, TEXTILES, PAPER & CHEMICALS MFG.

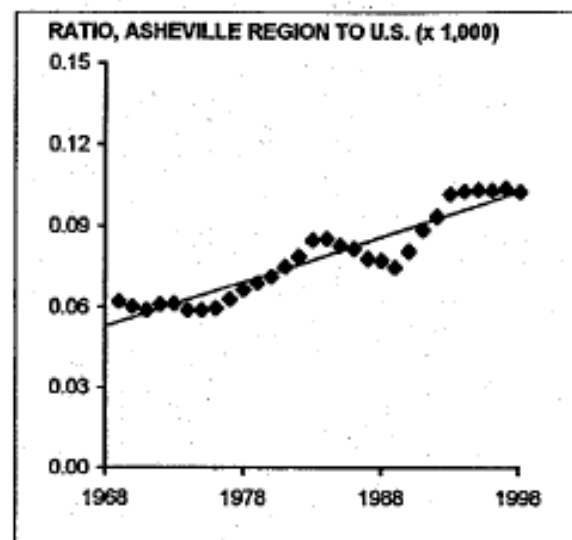
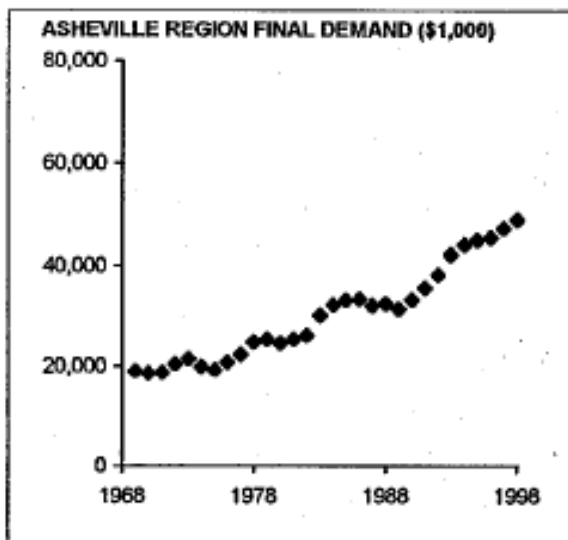
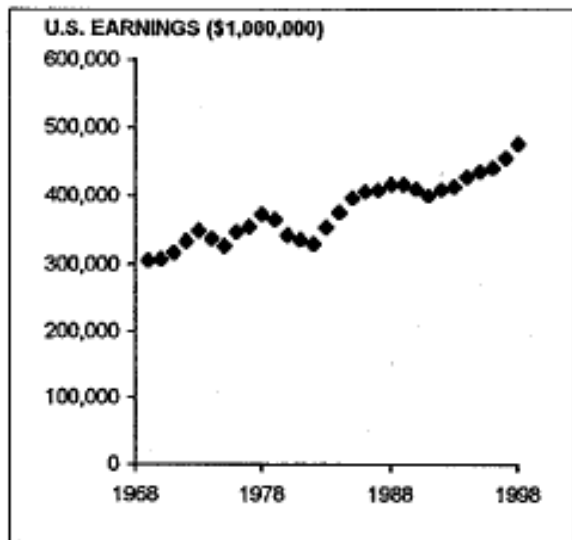
APPAREL & TEXTILE PRODUCTS MANUFACTURING



PAPER & CHEMICALS MANUFACTURING



RETAIL TRADE



TOURISM & SECOND HOMES

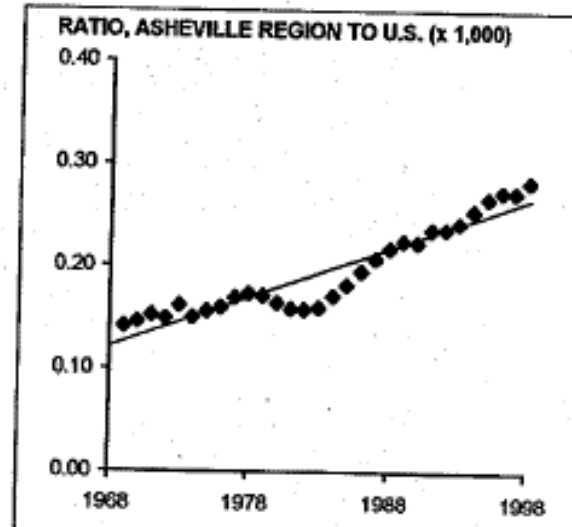
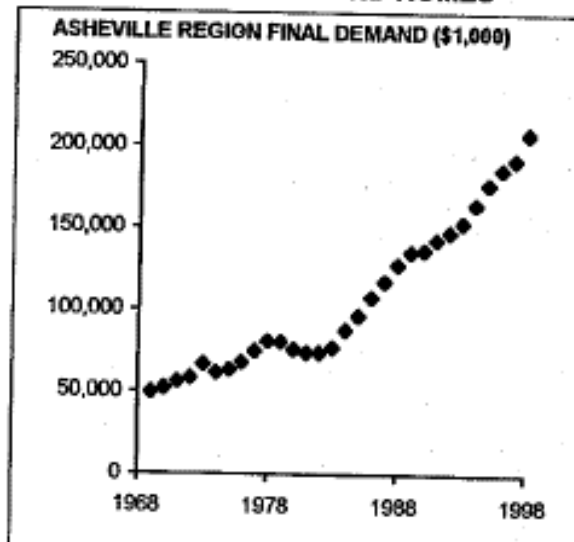
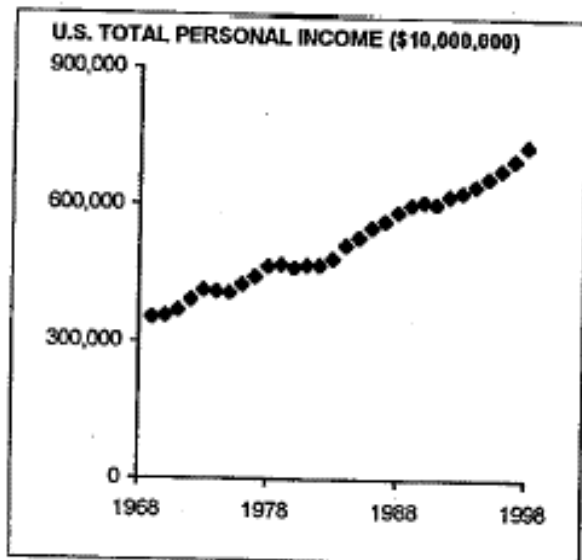
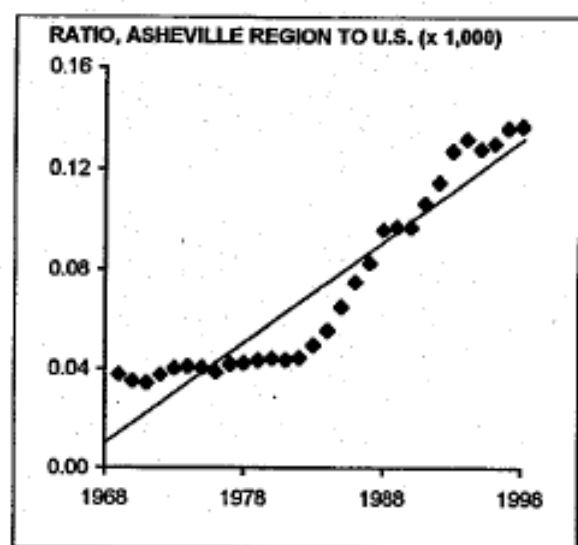
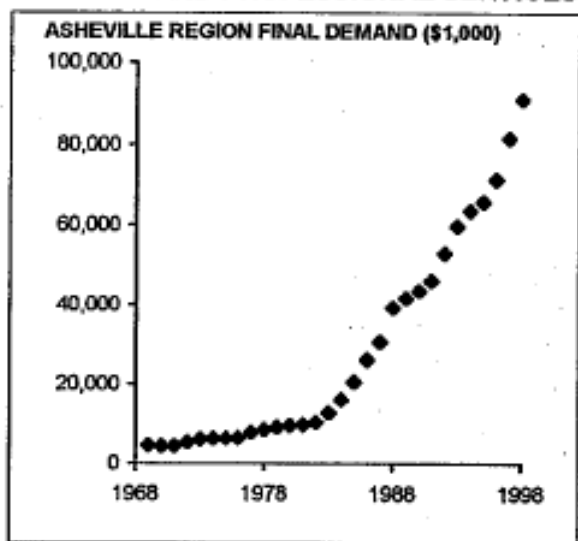


Figure A-7. U.S. EARNINGS VERSUS ASHEVILLE REGION BASIC EARNINGS IN BUSINESS, PROFESSIONAL AND HEALTH SERVICES

BUSINESS AND PROFESSIONAL SERVICES



HEALTH SERVICES

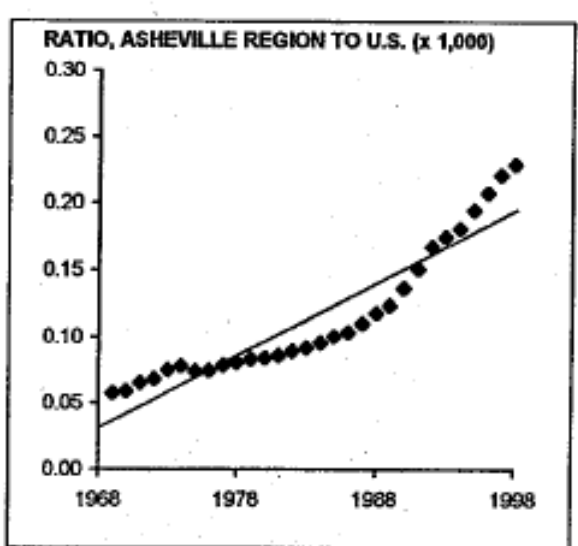
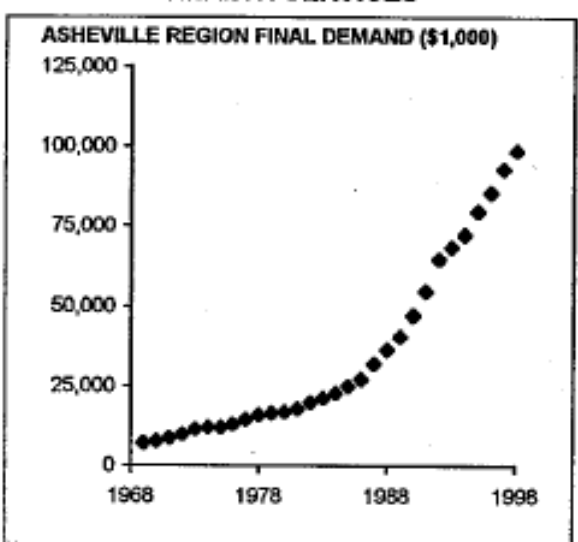


Figure 10. SEQUENCING OF VARIABLES IN MODEL DEVELOPMENT AND APPLICATION

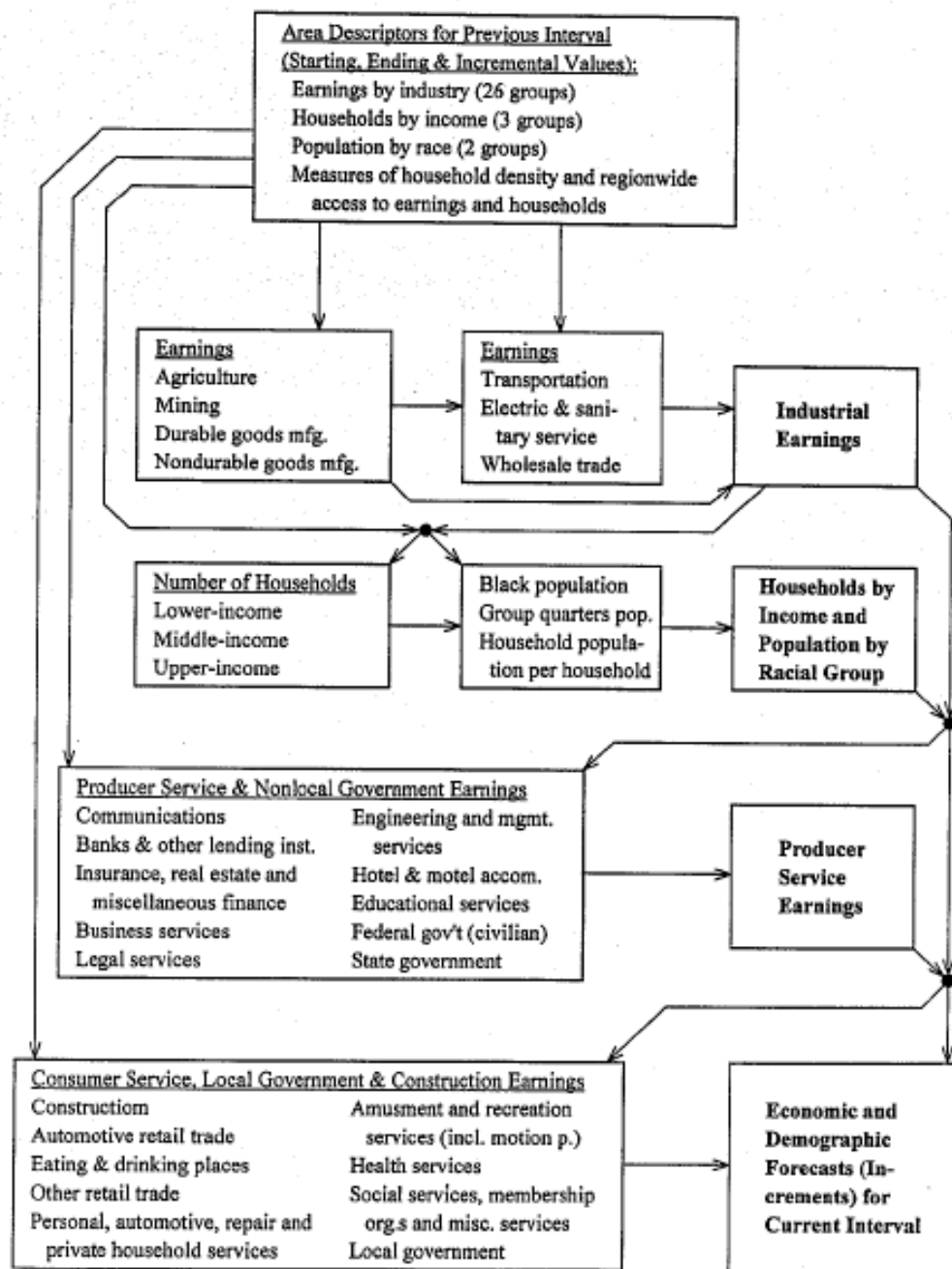


Figure 5
SCHEMATIC DIAGRAM OF ASHEVILLE FORECASTING PROCESS

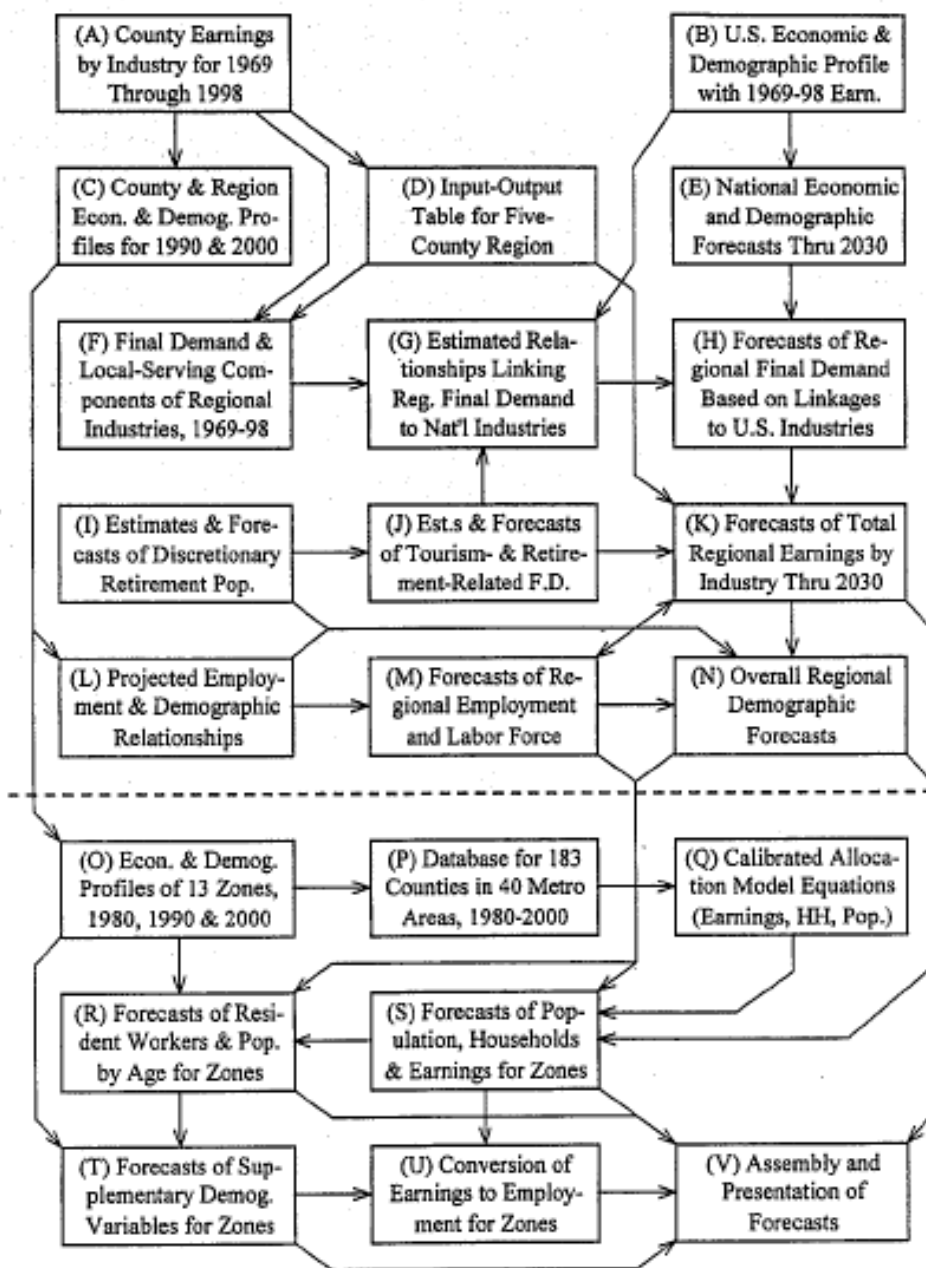


Figure 6. POPULATION AND EMPLOYMENT FORECASTS, REGION VERSUS U.S.

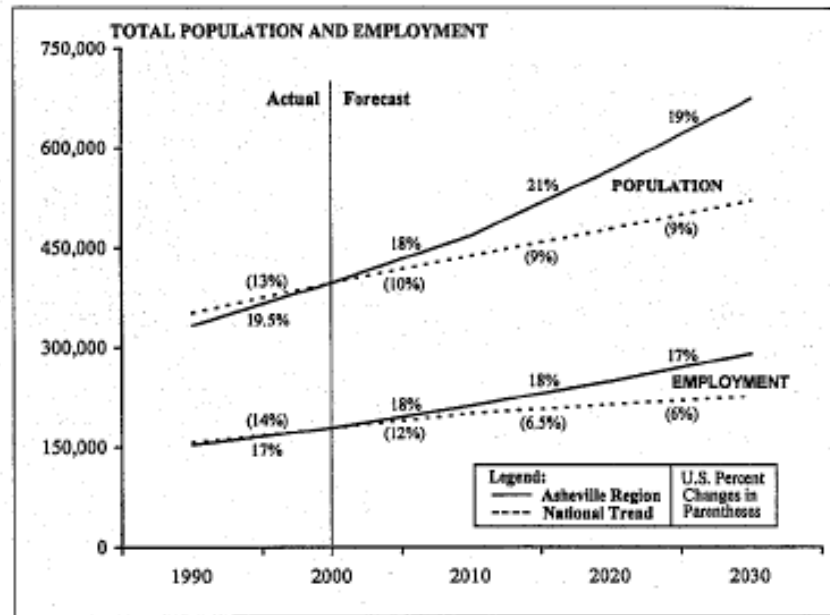


Figure 7. FORECASTED AGE DISTRIBUTION, ASHEVILLE REGION VERSUS U.S.

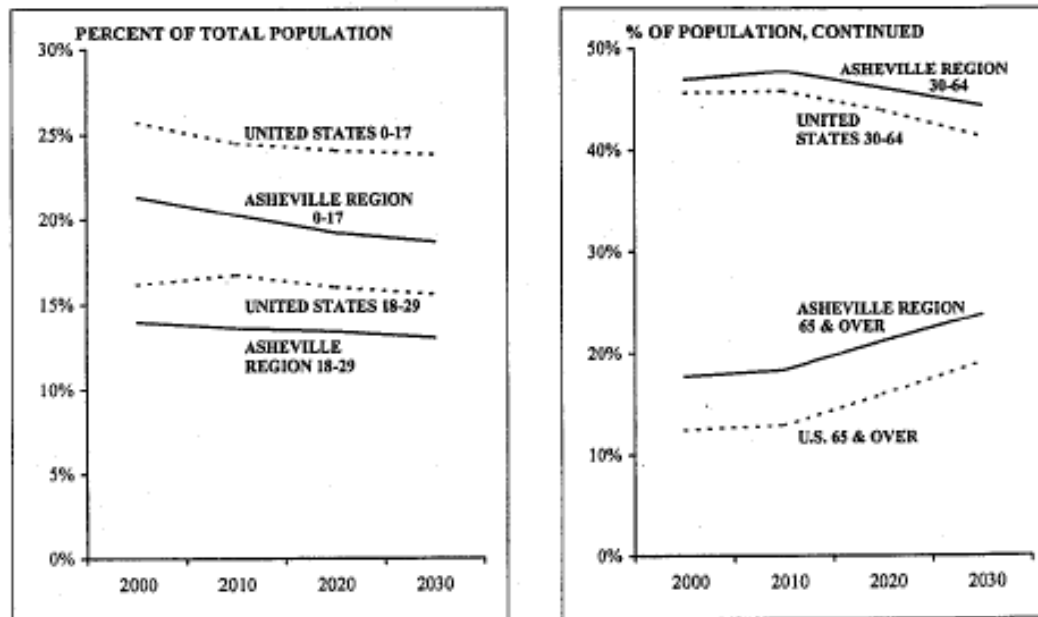


Figure 3. SHARES OF TOTAL EARNINGS IN SELECTED INDUSTRY GROUPS, ASHEVILLE VERSUS U.S.

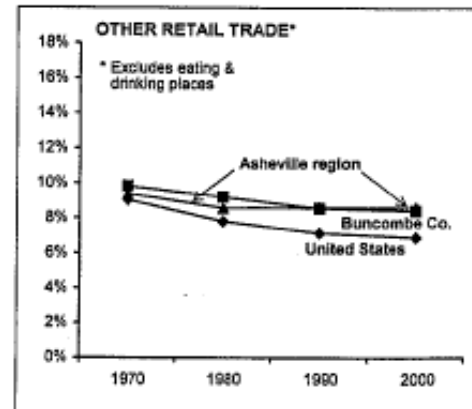
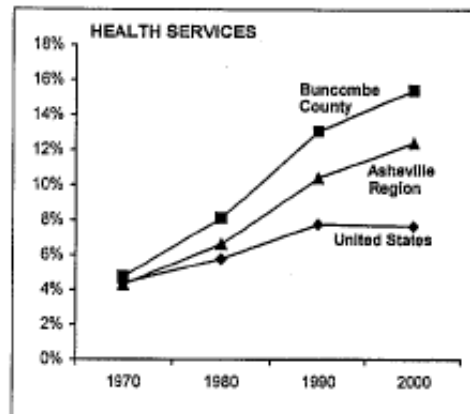
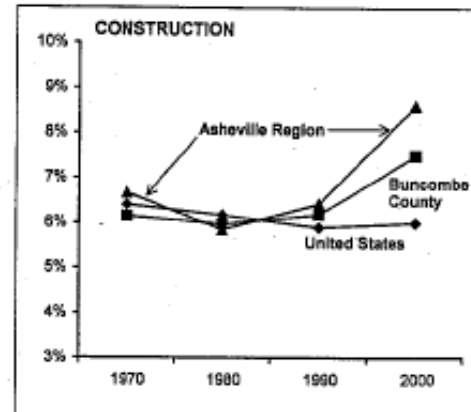
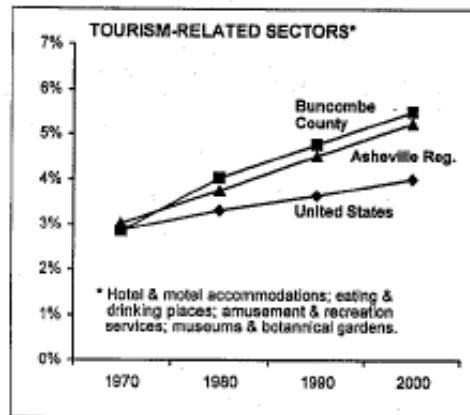
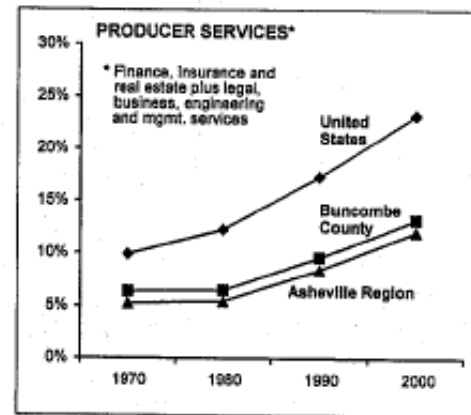
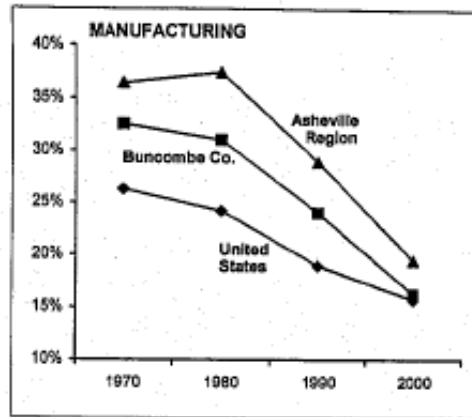
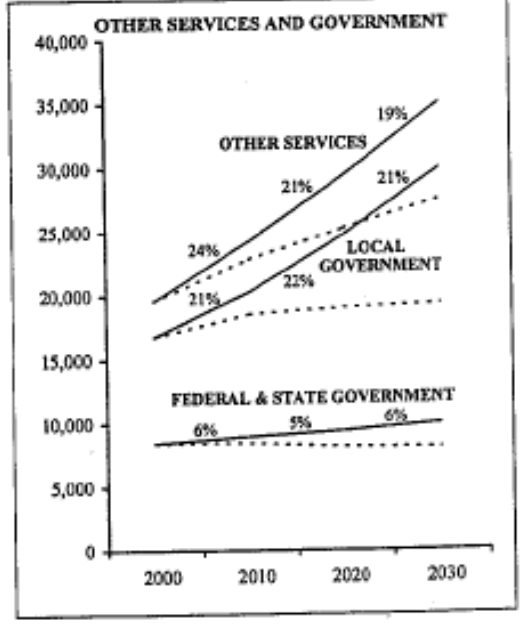
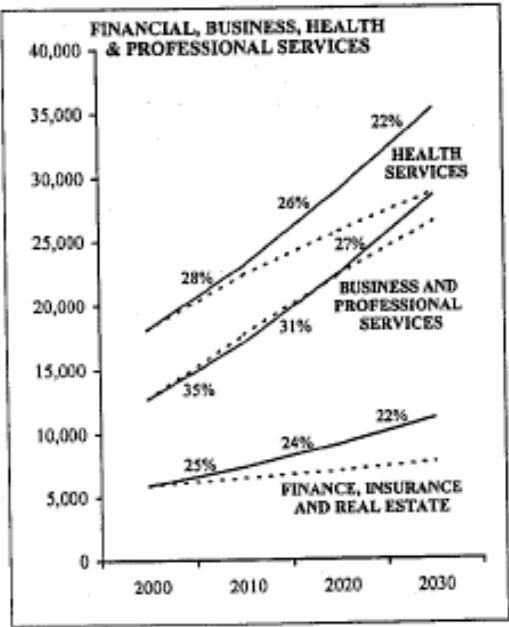
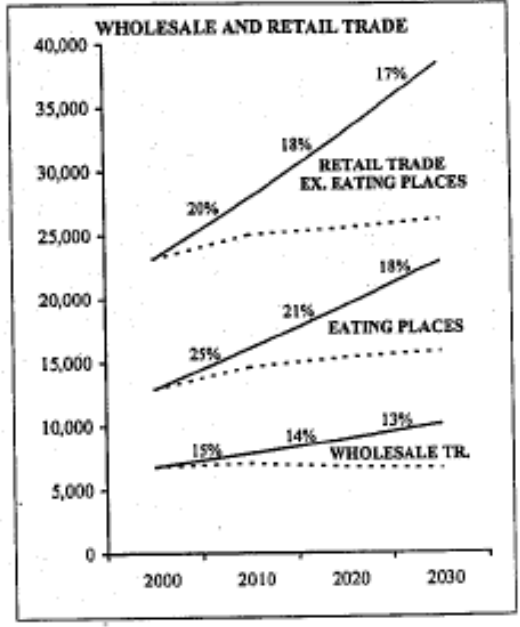
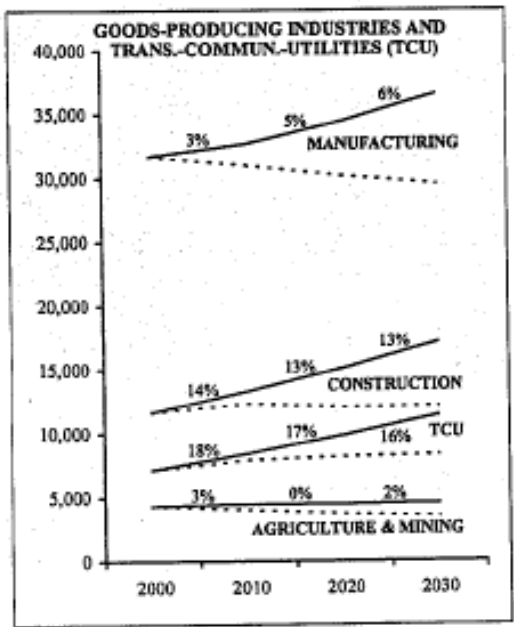


Figure 8. EMPLOYMENT FORECASTS BY MAJOR INDUSTRY, WITH 10-YEAR PERCENT CHANGES FOR ASHEVILLE REGION

Legend:
 — Asheville Region
 - - - National Trend



TAZ Allocations

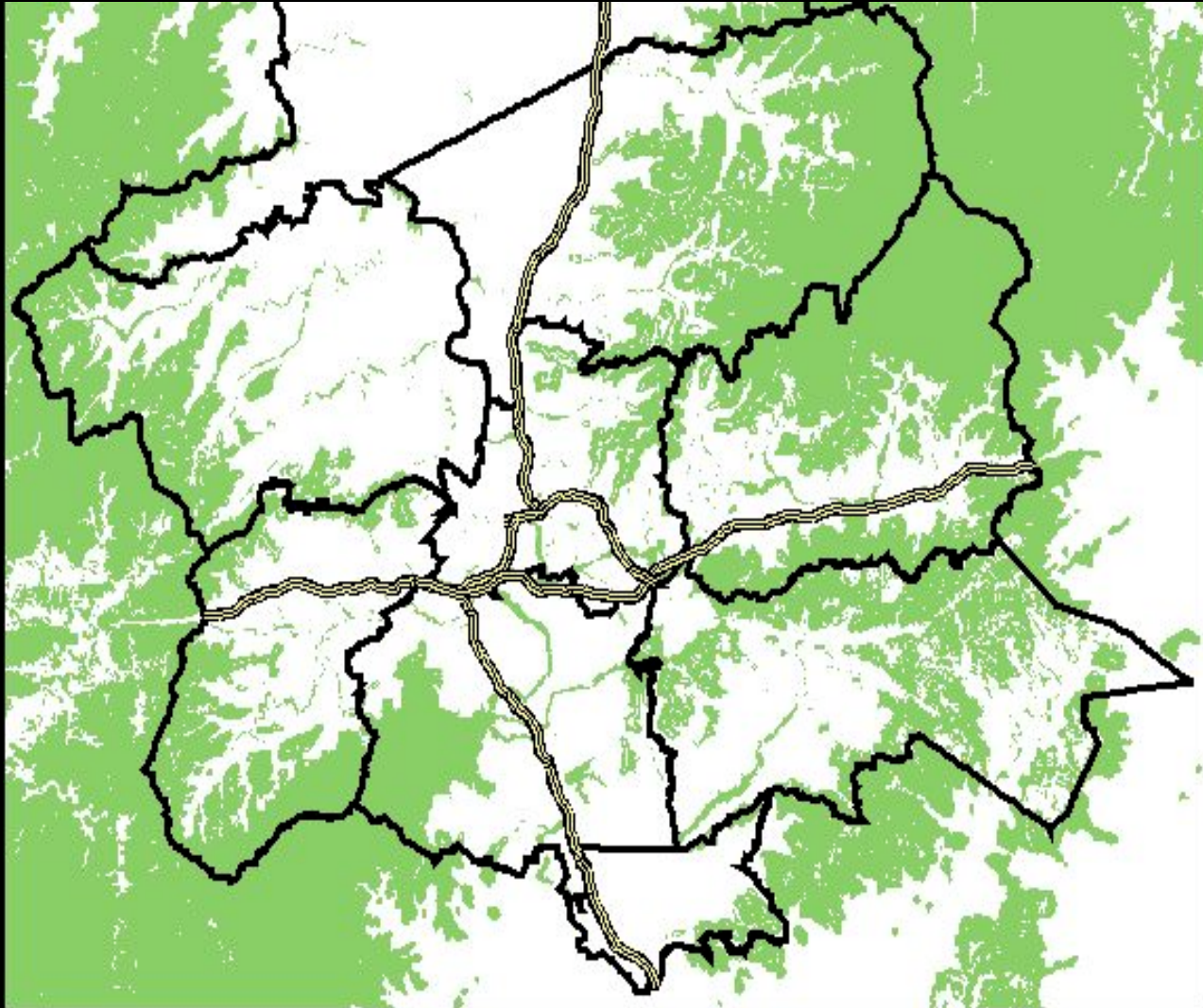
- Allocate at the TAZ level for households and employment
- Methodology seeks to be:
 - Simple
 - Rational
 - Replicable
 - Defensible

TAZ Allocation Model

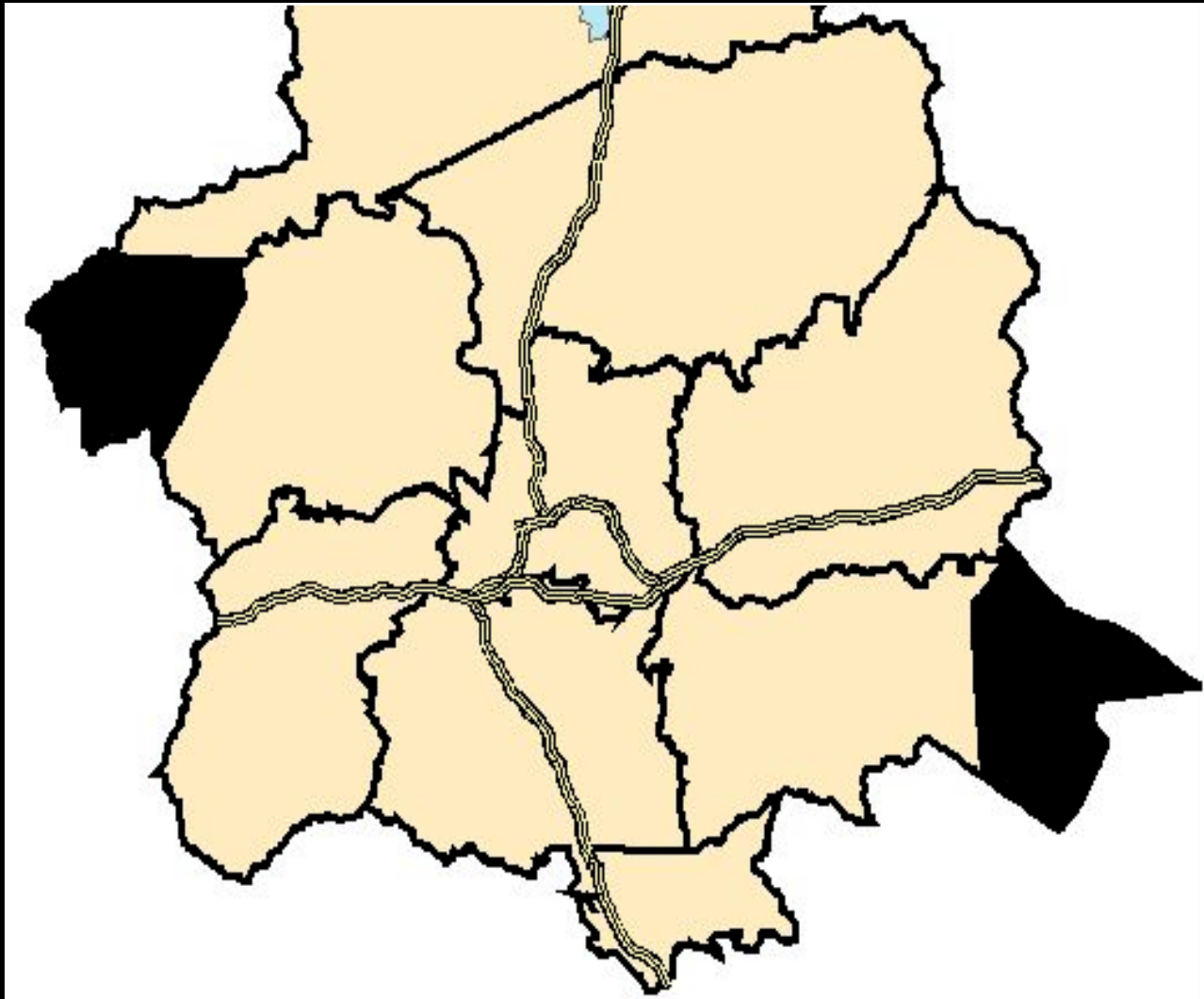
Suitability

- Identify constrained lands
- Identify developable lands
- Define growth attractors (suitability criteria)
 - Sewer and water service
 - Appropriate zoning (if applicable)
 - Slope suitability
 - Access to major roadways/interchanges

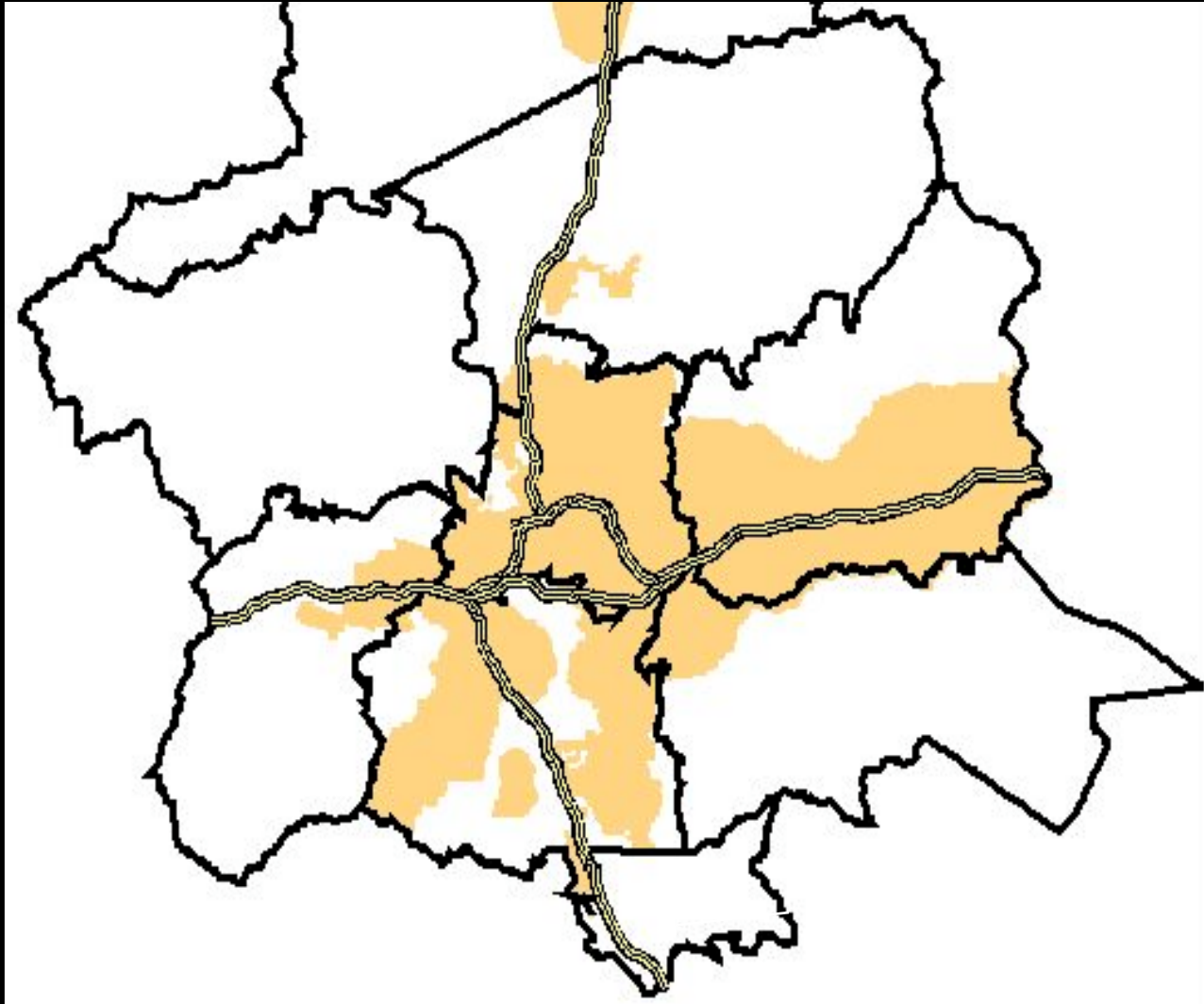
Constrained Land



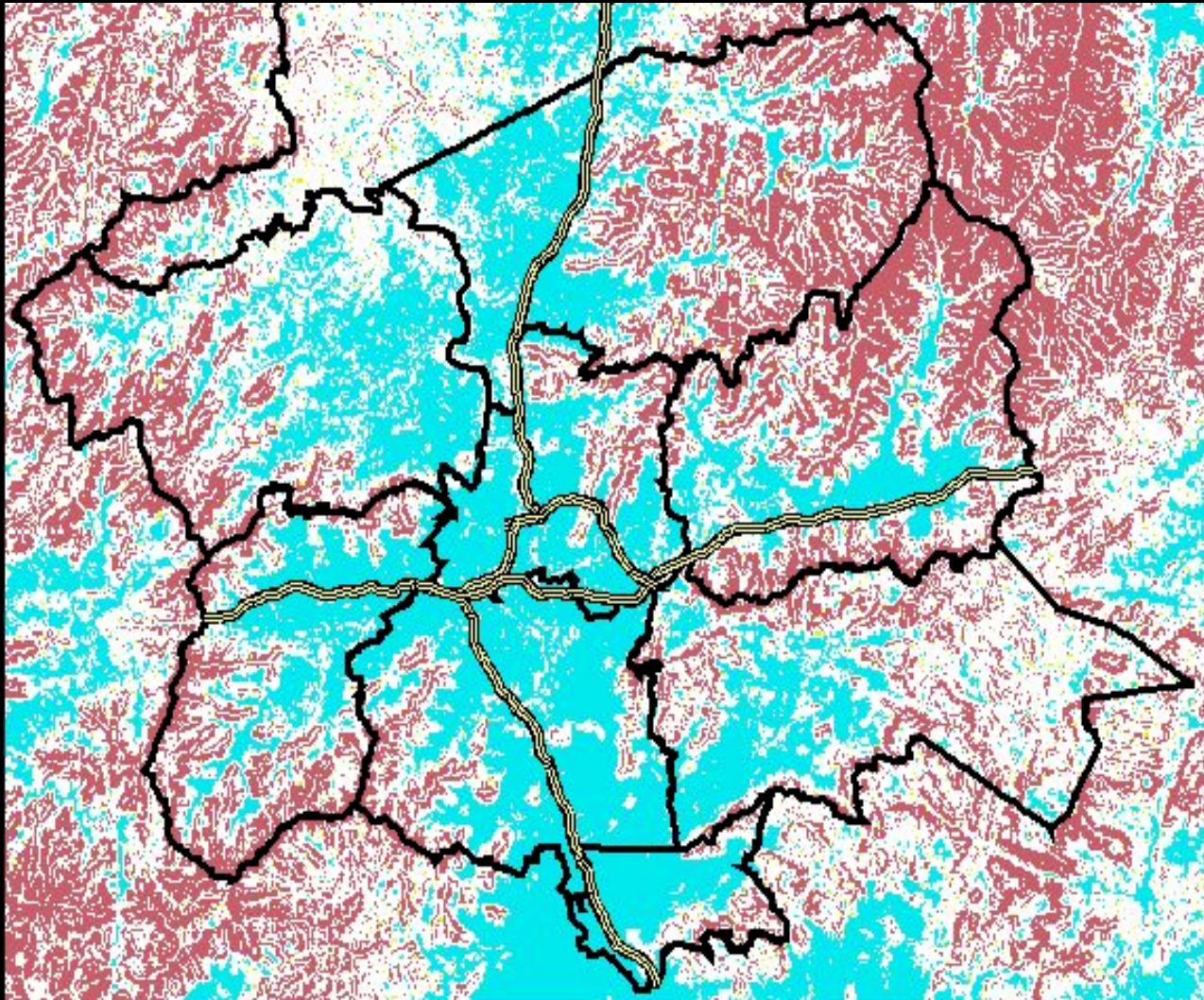
E+P Water Service Areas



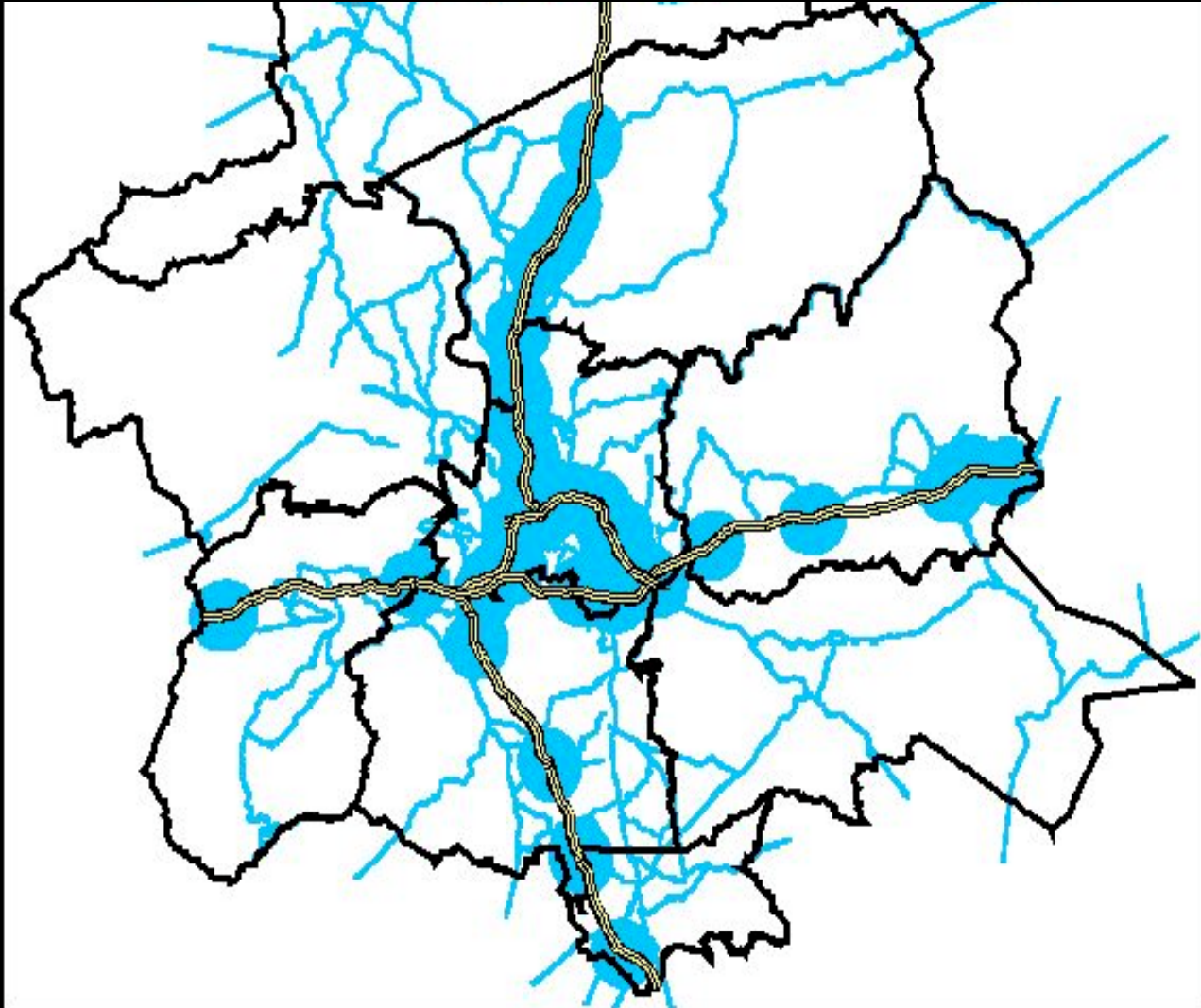
E+P Sewer Service Areas



Slope Assessment

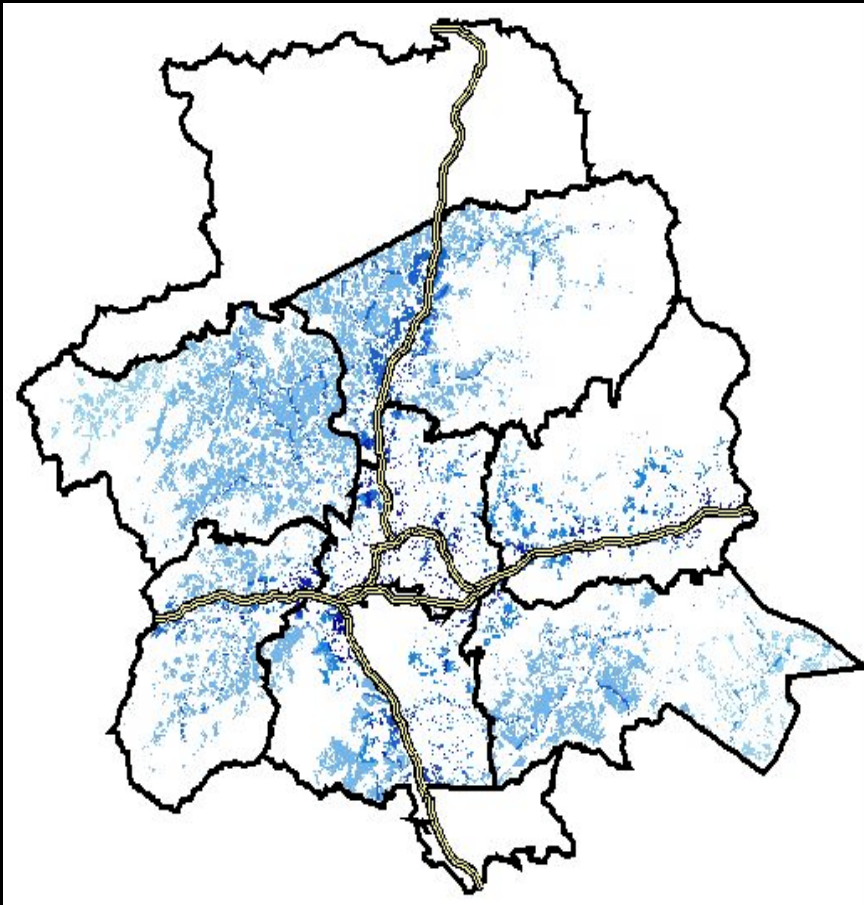


Major Roads and Buffers

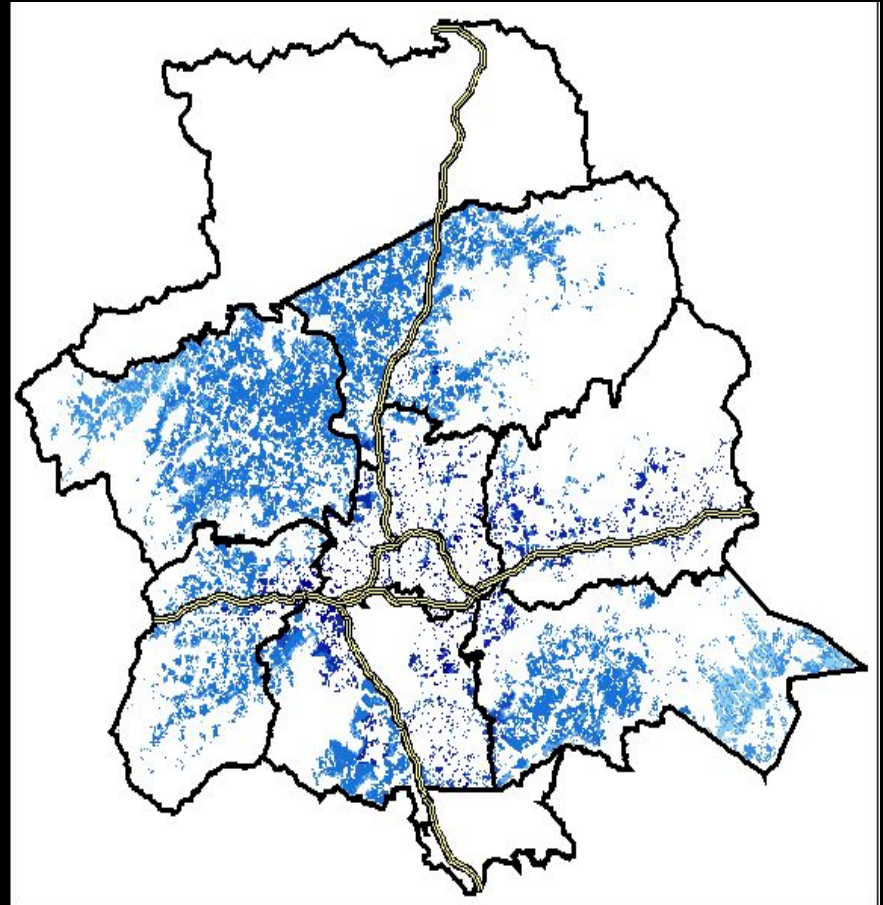


Suitability – Buncombe Co.

Employment



Households



Allocating Growth

Factor	Households	Jobs
Suitability Factors	80%	60%
Agglomeration Factor	20%	40%

Employment Data Characteristics

- There is no such thing
 - Definition
 - Geographic location
 - Manner of collection
- Disclosure regulations

Sources of Employment Data

- Published
 - Census tables P43 & P48
 - Census table PHC-T-40
 - Bureau of Economic Analysis (BEA)
 - Bureau of Labor Statistics (BLS)
 - County Business Patterns (CBP)
 - Economic Censuses
 - Current Labor Force Data

Sources of Employment Data

- Unpublished
 - Employment Security Commission (ESC)
 - InfoUSA
 - Woods & Poole
 - Global Insight

US Census

- Tables P43 & P48 – Workers by place of residence (block group, tract) from SF 3. Use for workers/hhold, as control total for family/non-family hholds.
- Table PHC-T-40 –Consistent description by place-of-work & -residence. Workers living/working in area.
- CBP – From business register, IRS, SSA, & BLS. 9 establishment size categories. Only wage-& salary. No self-employed, agriculture, railroad, private hhold, or public-sector.
- Economic Censuses – Not useful.

Bureau of Economic Analysis

- Regional Employment Information System
 - Leading source of county economic data
 - Very detailed earning data
 - Includes all economic sectors & job types
 - Full-/part-time
 - Any revenue-generating activity
 - 25% above BLS, and growing

Bureau of Labor Statistics

- Most-quoted national source
- 1 worker → 1 primary job (~Census)
- Exclude agriculture
- Not below metropolitan areas
- Monthly updates (1 month lag)
 - Good for updating & adjusting other data

InfoUSA

- Proprietary, but cheap
- Telephone-based, includes self-employed
- Updated, but not archived
- Geo-coded, with addresses
- Type of establishment, # employees
- Quirks & QA/QC issues

ESC (ES-202)

- Used for unemployment insurance
- Monthly updates
- Includes part-time workers, but not employees of railroads, churches, & others
- Disclosure rules

Employment Benchmark

- Public over private sources
- ESC records as main basis...
 - ...but still need to adjust for consistency.

U.S. Employment According to Different Sources and Definitions

	Employment by Place of Residence (= No. of Workers)	Employment by Place of Work		
		Primary Jobs (One Per Wkr.)	All Jobs Incl. Second & P-T	% Dif. From <i>Census P43</i>
1990 Employment:				
Census P43	115,681,202			
BLS (nonfarm)		109,487,000		-5.4%
BEA			139,380,900	20.5%
2000 Employment:				
Census P43	129,721,512			
Census PHC-T-40	128,279,228	128,168,928		-1.2%
BLS (nonfarm)		131,785,000		1.6%
BEA			166,758,800	28.6%

2000 Employment in Metro Wilmington and Component Counties

	Brunswick	New Hanover	Pender	Wilmington Metro Area
<u>Resident Employment</u>				
Census P43	32,355	81,238	17,896	131,489
Census PHC-T-40	31,962	80,088	17,732	129,782
<i>% Dif. from P43</i>	-1.21%	-1.42%	-0.92%	-1.30%
<u>Place-of-Work Employment</u>				
BEA	33,001	109,662	12,911	155,574
BLS (nonfarm)				119,800
Census PHC-T-40	26,985	91,999	10,069	129,053
Project File	25,940	92,554	10,145	128,639
<i>Ratio, Census/Project</i>	1.0403	0.9940	0.9925	1.0032

2005 Place-of-Work Employment in Metro Wilmington

		New		Wilmington
	Brunswick	Hanover	Pender	Metro Area
BLS (March 2005)				128,600
ESC (March 2005)	25,001	92,994	10,041	128,036
Info USA (unspecified 2005)	29,823	100,034	9,200	139,057
Scaled Project File (2005 ave.)	29,076	99,184	11,219	139,478

To Peg or not to Peg...

- Should aggregate employment be “pegged” to a published source?
 - BLS: available at regionally, if at all
 - New PHC-T-40: consistent & available
 - Assume one job/worker
 - Peg corrected establishment file to PHC-T-40 county place-of-work totals

Public-Sector Employment

- BEA, BLS, CBP
 - By payroll, not function
 - Typically consistent
- ESC & InfoUSA
 - Functional basis (NAICS)
 - NAICS 92 – Public safety & administration
 - NAICS 491 – Postal service
 - NAICS 61 – Public school & college teachers
 - Establishment totals typically low

Matching Private Sector Records

- Start at the top, & work down
 - In Wilmington, private establishments with ≥ 50 employees (360) represent 3.9% of ESC private records , & 43% of jobs (low).
 - Search & match from both ends (ESC & InfoUSA).

Observations & Other Stuff

- QA/QC
- Interim updates
- SIC → NAICS
- Vacation homes, resident tourists, etc.
- Trip generation
- Network/TAZ structure

