Let's Talk

Growth Management Projections

City Estimates

County Estimates

Office of Financial Management
October 20, 1999

Growth Management Projection

Key Elements of RCW 43.62.035

1. Directs OFM to prepare 20 year GMA planning projections. Updates are every five years.

2. Each county's projection is expressed as a reasonable "high" and "low" range.

3. County projections are developed within the state "high" and "low" projection.

4. Counties and cities

   - May provide information.
   - Have a right to review projections before final adoption.
   - May petition OFM to revise the projection.

5. Local governments in each county allocate the projected population within the county.

Forecast Model Uses the Components of Population Change

1. ***Starts*** with base census population, by age.

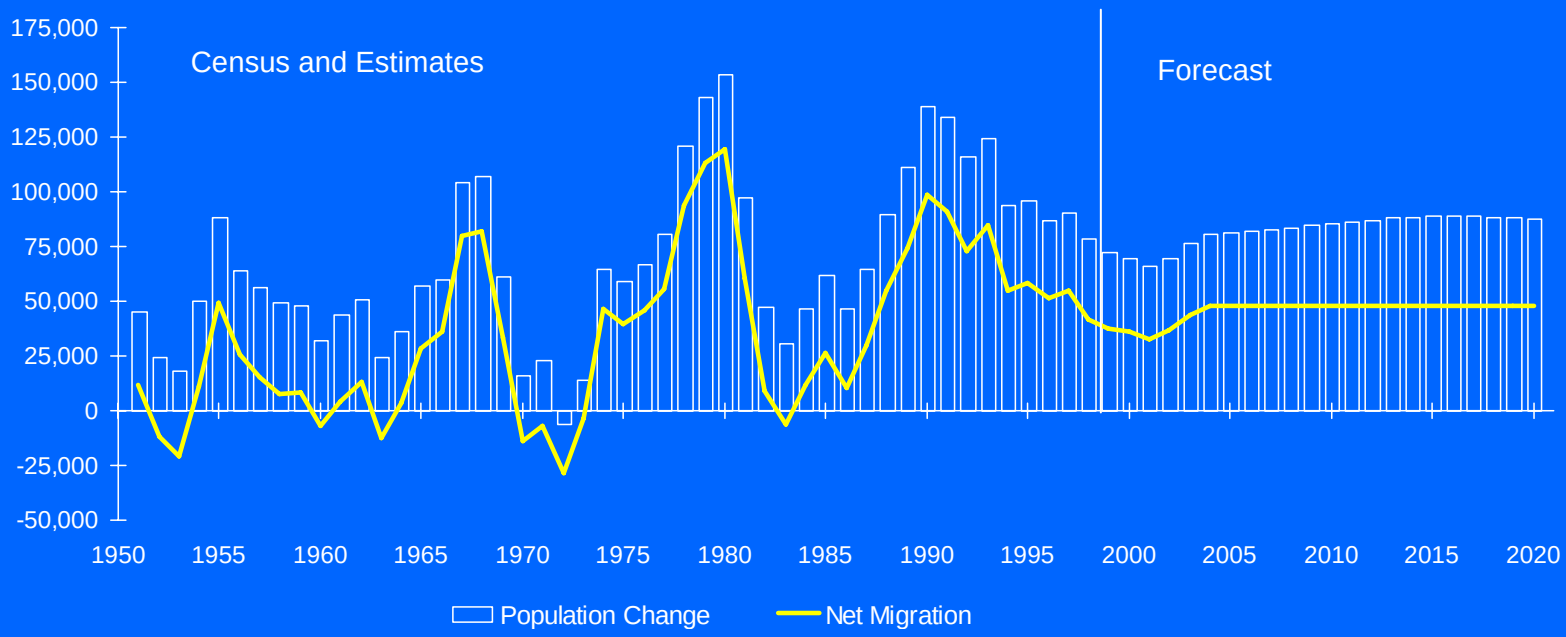
2. *"**Ages**" this population forward in time using specific assumptions about births, deaths, and migration.*

Births are relatively stable at about replacement level for the state. County fertility ranges from just over one average lifetime birth for women in Whitman and Kittitas to three or more births per woman in Yakima, Adams, and Franklin. Every county's fertility is carried forward with only slight increases, following state trends.

Deaths are relatively stable. Only slight future increases in life expectancy are anticipated. The state lifetable is used for the counties.

Migration is variable and generally determined by "relative economic advantage." *Historical county trends are carried forward, but are ultimately tied to state level expectations.*

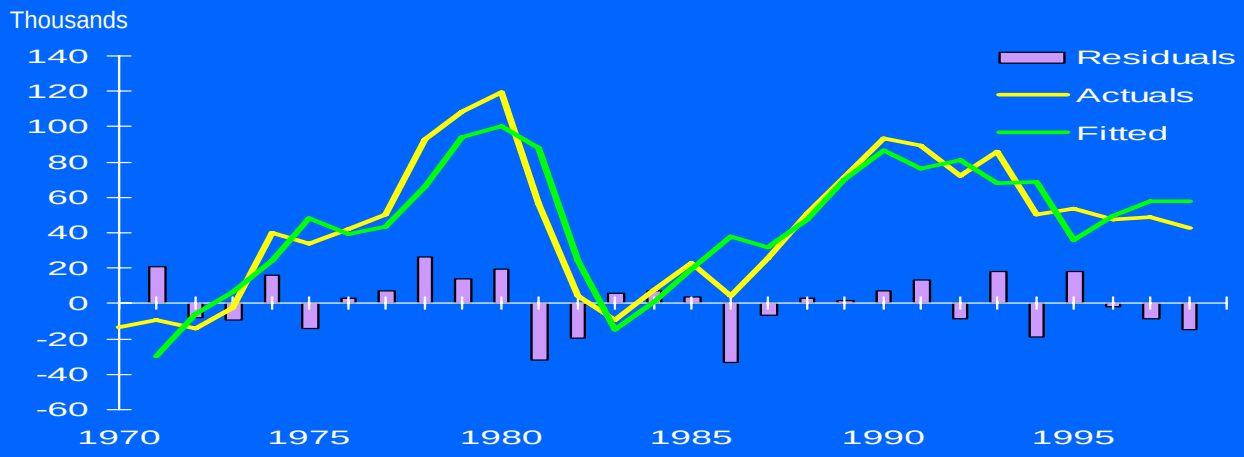
Washington: Annual Population Change and Net Migration



- Population estimates provide annual growth and annual migration gains/losses.
- Factors related to migration are identified from these annual patterns.
- Migration from other states has always contributed greatly to Washington's growth — and most migration is due to the strength of Washington's economy relative to other states.

Comparison of Actual and Predicted Net Migration

Comparison of Actual and Predicted Net Migration Using OFM's Model, 1970-1998



Migration is projected by relating changes in "traded sector" employment to net migration. "Traded sectors" are those industry sectors which export goods or services to other states or countries. The econometric model includes four major components:

- The percent change in Washington's traded sector employment relative to the percent change in traded sector employment in the U.S.;
- The percentage change in Washington's traded sector employment relative to the percentage change in traded sector employment in California;
- The U.S. unemployment rate; and,
- Net migration in the previous year.

Assumptions in Long-Term Employment Expectations That Determine Migration

- **Washington is expected to out-perform the U.S. in the growth of the traded sector employment.** This makes Washington an attractive place, economically speaking, for potential migrants.

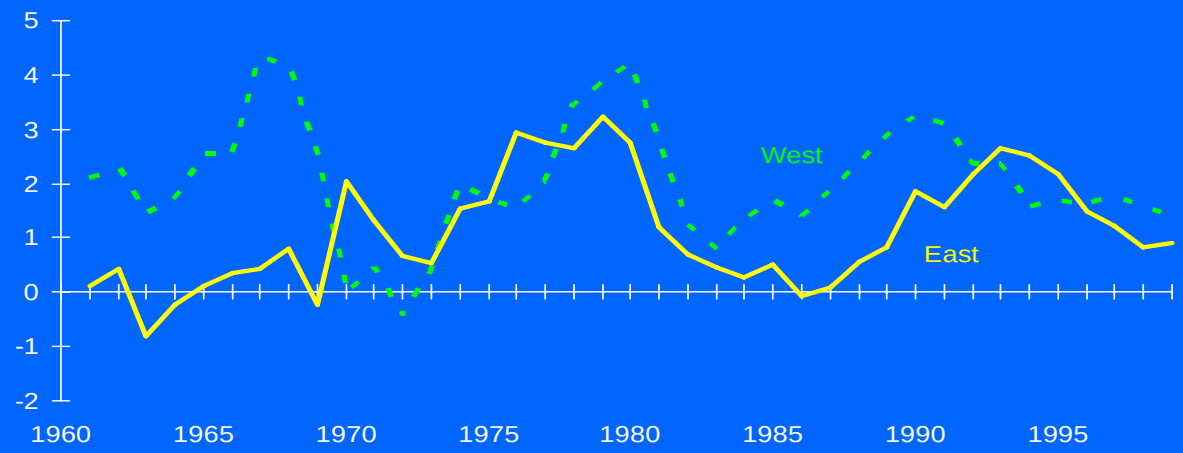
- **Growth in manufacturing employment in Washington is expected to perform better than in the U.S. and California.** The forecasts for California and the U.S. show a long-run decline in manufacturing employment. In Washington, manufacturing employment is predicted to maintain a small but positive rate of growth.

- **Employment growth in business services and other producer services in Washington is expected to perform better than the U.S. producer services employment in the early years of the forecast.** Historically, Washington has experienced significantly faster employment growth in producer services than the U.S. This is expected to continue with the difference declining.

- **Employment growth in federal civilian government employment in Washington will decline modestly in the near term, but not as much as in California or the U.S.** Washington has come out of the federal government and military reductions better than most states.

Regional/County Growth

- Nonmetropolitan/rural counties generally grow more slowly than the large urban Puget Sound counties.
- The economic base in rural counties simply does not support or attract large numbers of people. Eastern Washington, largely rural, maintains about 22% of the state's population.
- Even during the state's peak growth periods in the late 1960s and late 1970s, three-quarters of all the counties were losing (exporting) their young adults.
- Rural Washington had two major growth periods in the last 30 years — the "Return to the Earth Movement" in the mid-1970s and the "Rural Rebound" from 1992 to 1995.



Growth/Migration Expectations for Counties

Future expectations are generally extensions of prior trends.

- **Most growth will occur at existing population centers,** with the fastest growth occurring along the periphery.
- **Growth will occur along existing transportation corridors and spurs,** primarily the interstate highways and similar roadways.
- **Non-corridor growth** that has been happening due to retirement migration and telecommuting will continue, particularly in areas where sustained growth has occurred.
- **Remote areas,** with inconsistent growth histories, are assumed to have lower prospects for future growth, even if some growth has occurred during rural growth spurts.

Growth ranges for counties were generally established on the variability of historical county growth.

Tracking the 1995 Projections — All Counties

- The GMA projections are doing passably well — the overall trend is that growth is lagging somewhat behind schedule, particularly in the rural/nonmetropolitan counties. State growth is about one year slower than the “low” expectations.
- 18 counties are advancing within the projected range.
- 19 counties are below the growth expected on the “low” range (half of these are just slightly lower, could easily be back in the range this early in a 20 year projection).
- 2 counties, Clark and Snohomish, are advancing faster than the growth expected in the “high” range. Snohomish’s growth is just slightly beyond the range. Clark’s is substantially beyond the range.
- Strong national economy has reduced Washington’s attractiveness;
- Added jobs are not as closely related to migration gains (historic lows in unemployment) and now reductions in aerospace employment.
- Since California’s economic recovery, growth has literally halted in many rural areas; and,
- Apple prices, WorkFirst, and Salmon Recovery are also taking an unanticipated toll on rural growth.

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Commonly Asked Questions About GMA Population Projections

Q: Is 1995 the latest one? When will there be a new one?

A: Yes. Update is scheduled for late 2001/early 2002 when results from the 2000 census are available.

- Pre-census work currently being done.
- April 2000 -- Count date.
- Summer/Fall 2000 -- Wrapping up and analyze data.
- December 2000 -- Results put on President's desk.
- Spring 2001 -- Release results. (Total population counts, no age data. This date could slide forward 3 months.)
- Summer/Fall 2001 -- Develop population projections.
- Fall/Winter -- Develop population projection.
- Early 2002 -- Release data (age data will be an estimate).

Commonly Asked Questions
About GMA Population Projections

Q: Do you factor in growth changes due to GMA in the projections?

A: No. Right now it is difficult to anticipate or quantify changes in growth due to GMA. As any change occurs it will be included in the trends and incorporated in the projection updates.

Q: Do your population projections include expected infrastructure growth?

A: No, not explicitly. We request planned highway construction from DOT and planned prison/institutional construction, and we talk to local planners. But, with the exception of institutional facilities, this knowledge is difficult to handle explicitly (quantitatively) in the projections. Water resources are a large emerging issue.

City Estimate Method

The Housing Unit Method is used to estimate city populations. A simplified version is shown below:

Current City Housing	X	Occupancy Rate	X	Ave. Persons Per Occupied House	=	Persons in Houses		
						+		
Current count of persons in nursing homes, correctional, other facilities					=	Persons in Facilities		
					=	Total City Population		

OFM's annual population estimates are bench marked to the most recent federal decennial census and use federal census data and definitions.

The 1990 federal census housing counts are updated on the basis of new constructions, demolitions and annexation.

The method is only as good as the accuracy of the information going into it!

How can cities help OFM develop an accurate estimate?

- Local jurisdictions should provide OFM with accurate and consistent housing and group quarters information (Form A Data).
- Other information added to the estimation process needs to fit into the housing unit method in a quantitative manner.
- The 1990 federal census measures of occupancy rates and average persons per household can be updated, when possible, on the basis of available administrative or survey data.
- ***The most important prerequisite is that the administrative data be available for 1990.*** A comparison of the federal census and survey results in 1990 identifies the differences in the two sets of data due to differences in collection, definition, and geographic coverage.
- Criteria to ensure accuracy are important. Cities share a set revenue fund. Population increases reduce the per capita allocation to all cities. Small shifts in average household size and vacancy rates for large cities have a dramatic impact on the allocations.
- ***All data used in developing annual estimates must be of sufficient quality to meet legal challenges.***

What type of data can be used to update occupancy rates?

Real estate vacancy surveys and utility data are probably the most visible information that can be used to update occupancy rates—but only under specified conditions. We need to know the relationship between the data and the occupancy rate at the last census.

Real estate vacancy surveys measure the cost and availability of apartment rentals. Rental surveys fall notably short of counting federal census vacancies for two primary reasons. First, many “rented” units are not occupied by federal census definitions. Second, these surveys only cover apartment units that are currently on the rental market.

Specific differences are outlined on the next slide.

Vacancy Differences in Real Estate Surveys versus the Bureau of the Census

Managers Say "Rented or Occupied" And Other Circumstances

1. Units rented for temporary use by firms for contractors, consultants, employees on the road.
2. Persons moving may "overlap" rentals for a few weeks.
3. Rented apartment is a commuter's work residence as compared to home residence.
4. Units under renovation are not reported as vacant by managers because they are not on the rental market.
5. Time share units considered occupied.
6. New completed apartment buildings are excluded from real estate surveys for 18 months.
7. Apartment construction in progress is excluded in real estate or telephone vacancy surveys.

How Units Are Defined by The Bureau of the Census

1. Temporary use rentals are counted vacant, not occupied by usual resident.
2. The unit the person is moving into is considered vacant.
3. The unit that is not the usual residence of the commuter is counted as vacant.
4. Units under renovation are counted as vacant.
5. Time share units counted vacant, no usual resident.
6. Units in new apartment buildings are counted as vacant.
7. Apartment units under construction are counted as vacant if walls, roof and door are in place.

Due to differences in definition — real estate surveys could contact 100 percent of the apartment buildings in an area and still obtain vacancy rates far lower than the federal census.

What type of data can be used to update household size?

- It is difficult to obtain data reflecting changes in household size without a full census.
- Enrollment data may be of value if school district boundaries are consistent with city boundaries.
- OFM is currently using a county level regression model to adjust household size.

May partial surveys be done to obtain occupancy and/or household size data for select categories of housing?

Partial surveys are not used because structure type counts are not consistent with the census (base) and and discrepancies cannot be resolved. The partial survey for multi-unit occupancy rates below illustrates the problem.

Units Surveyed in a Partial Survey for Multi-Unit Occupancy Rates

Housing Type	1990 Census	Change 1990-96*	1996 Estimate	1996 Survey Results	Difference
1-Unit	2,108	112	2,220	NA	NA
2-Unit	480	22	502	480	-22
3 & 4 Unit	301	24	325	450	125
5 or More	920	130	1,050	905	-145
MH/Spec.	236	0	236	NA	NA
Multi-Unit Total			1,877	1,835	-52

*Net change based on building permits and demolitions since 1990 census.

- Does the 22-unit survey undercount in two-unit structures indicate that mother-in-law-apartments in what appear to be single family residences have been missed?

- Does the 125 unit survey over count in 3 & 4 unit structures indicate that row housing classified in the previous census as single-family is now in the multi category count? If so, should these be subtracted from single family? How many? To determine what has occurred requires additional fieldwork.

- Does the 145 unit survey under count in 5 or more unit structures indicate apartments above commercial establishments have been missed? Or, have apartments used for storage or under renovation been missed? Is the survey's higher occupancy rate due to the fact these units were missed? Were fewer new units actually constructed?

- What is the city's total housing stock? Are the units categorized in the last census that were not surveyed now so mixed with surveyed units that the census occupancy rates and household size are no longer valid?

If a city spends money to conduct a survey, the survey should provide accurate information to resolve issues and/or questions. Partial surveys result in several disputable issues that will make a substantial difference in the city's population estimate.

What type of surveys are approved by OFM?

- Small and medium sized cities are encouraged to conduct a special census. This is a 100 percent survey of all city housing in accordance with federal census definitions and procedures. Prepared instruction manuals and cost estimates are available on request.

- For large cities, sample surveys are used to obtain current occupancy and household size information. Total coverage is too expensive. A random sampling procedure is used for each housing category type. It is required the sample size yield an error of only 1.5 percent at 95 percent confidence.

County Estimates Method

Three methods are developed for each county using the Housing Unit Method, Component Method II, and Ratio Correlation.

I. **Housing Unit Method**: Same as described for cities.

II. **Component Method II**:

+ Base Census Non-Group Quarters Population Under Age 65
+ Natural Increase for Population Under Age 65
+ Net Migration for Population Under Age 65 (based on school-age migration)
+ Group Quarters Population
+ Estimate of Population Age 65 & Over Based on Medicare

= Total Population

- Key Feature is developing migration from census data, births, and school enrollment.

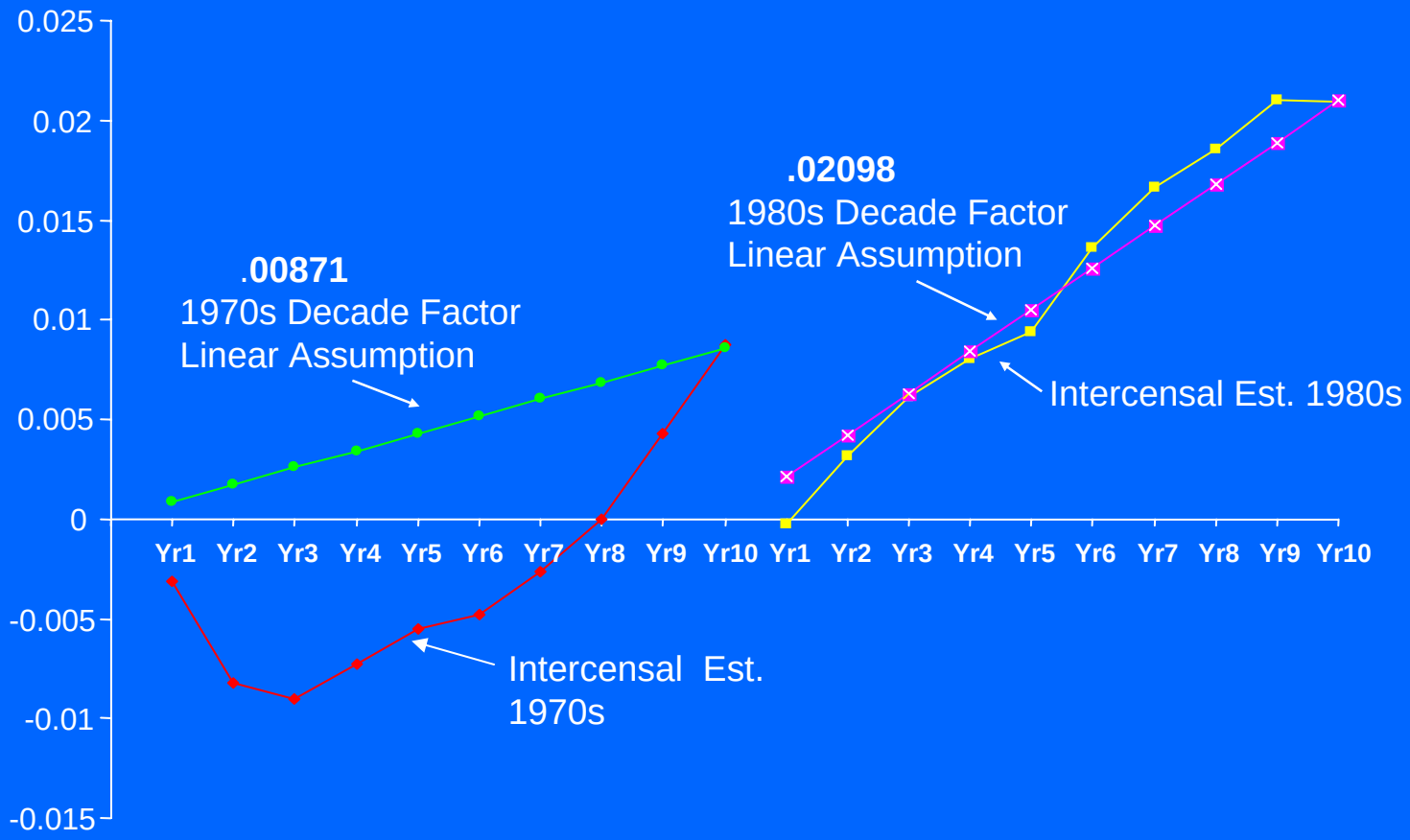
- The base census population that would be age 6 through 14 on the census date is compared to grades 1-8 enrollment on the estimate date.

- The school-age migration rate is then converted to a migration rate for the population under age 65.

- Conversions are based on the relationship between school-age migration and migration of the population under age 65 during the prior decade (I.e., 1980 to 1990).

The school-age migration adjustment factor is called "Residual Migration." It is assumed to build in a linear manner over the 10-year estimate period.

Comparison of Annual CMII Residual Migration Adjustment Ratios Developed from Intercensal Estimates to Annual Adjustment Ratios Using Linear Change Assumptions



1980-90 10-year Residual Migration

State	*0.02098*
Island	0.21659
Pacific	0.12479
Pierce	0.06655
Kittitas	0.05751
King	0.05552
Franklin	0.05365
Whitman	0.04182
Skagit	0.02551
Snohomish	0.01994
Mason	0.01773
Jefferson	0.01295
San Juan	0.01205
Ferry	0.01116
Clallam	0.00978
Kitsap	0.00818
Grays Harbor	0.00327
Okanogan	0.00053
Whatcom	-0.0116
Chelan	-0.0119
Spokane	-0.0161
Clark	-0.0218
Pend O.	-0.0303
Grant	-0.0315
Benton	-0.0363
Thurston	-0.0428
Cowlitz	-0.0446
Yakima	-0.0465
Stevens	-0.0483
Klickitat	-0.0580
Lewis	-0.0618
Adams	-0.0680
Asotin	-0.0725
Garfield	-0.0927
Walla Walla	-0.1059
Douglas	-0.1318
Wahkiakum	-0.1534
Skamania	-0.1724
Columbia	-0.1849
Lincoln	-0.2448

Residual Migration is a Simple Difference Factor:

1. 1980-90 migration for age 65 & Under .10293

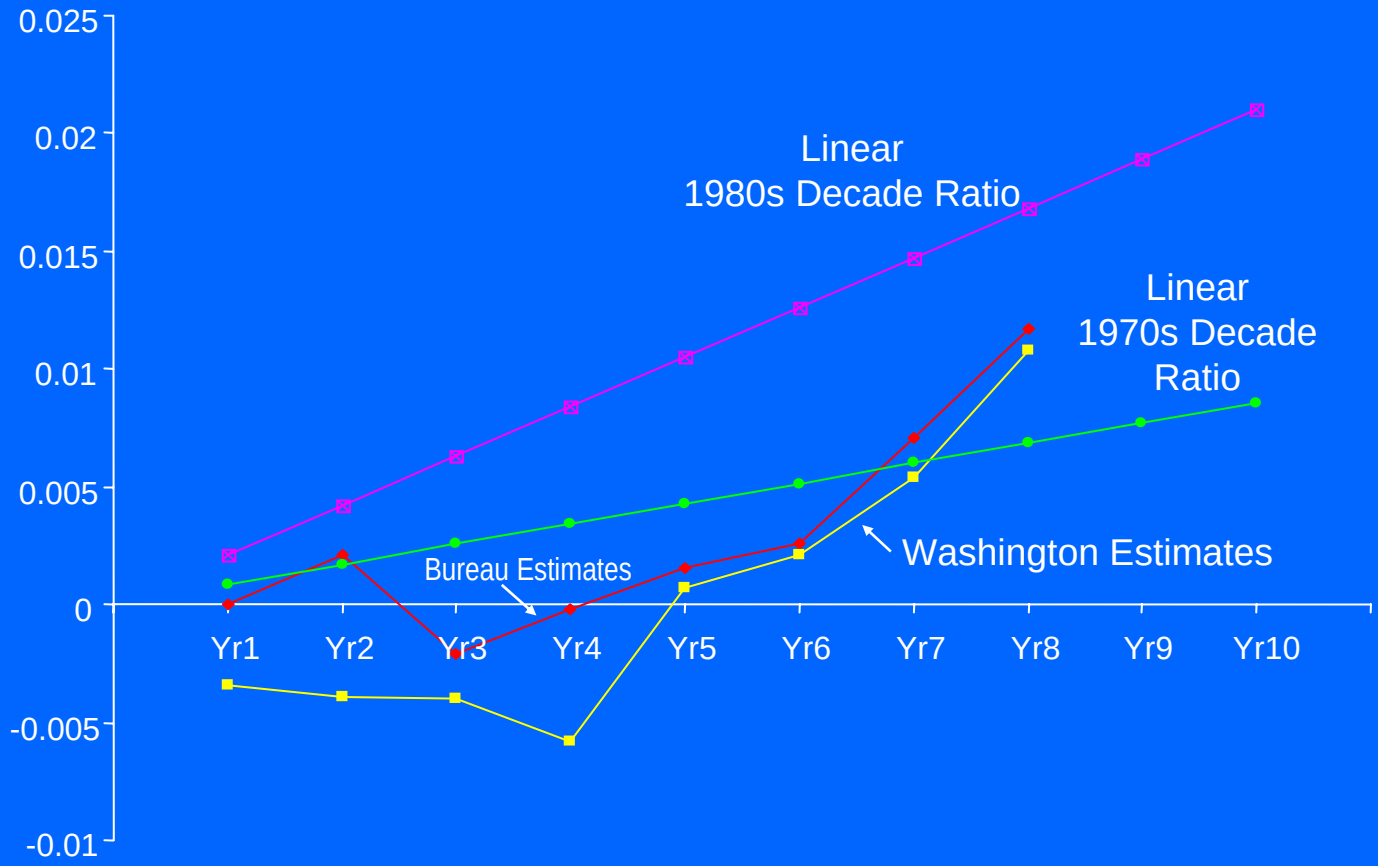
2. School Migration rate .08195

3. Residual Migration = (1)-(2) .02098

- **Decade adjustment factors oversimplify the relationship between school-age migration and migration of the population under age 65.**
- **Urban areas, rural areas, agricultural areas and recreational/retirement areas tend to have characteristic age patterns of migration.**
- **The relationship between school migrants and and all migrants under age 65 is not constant.**
- **At the beginning of an aerospace expansion, Washington attracts a preponderance of young adults & young families--movers without or with few school-age children. Families with grade school children follow, and then those with older children.**
- **The nonmetropolitan movements of the mid-1970s and again in the early 1990s also caused shifts in the age structure of migrants at a state level.**

By treating postcensal estimates as if they were census counts, you can track the changes in residual migration through the decade. The current pattern appears to be a mixture of the two prior decades.

Comparison of 1990-98 Annual CMII Residual
Migration Adjustment Ratios Developed from Postcensal Estimates
To 1970 and 1980 Annual Ratios Using Linear Change Assumptions



III. Ratio Correlation

- The Ratio Correlation allocation model distributes the state population to counties.
- The equation relates the change in each county's share of the state population over the last decade to changes in each county's share of a set of symptomatic indicators over the same period.
- Currently used are grade 1-8 school enrollment, driver licenses surrendered from out of state, natural increase, auto registrations, and registered voters.
- Ratio Correlation is a very solid method and works well when averaged with other methods.

General Discussion

Issues about population estimates in general:

- ***Good data are the foundation to population estimates.*** CMII requires good enrollment data that will accurately capture population change. The general quality of enrollment data that are comparable from year to year over the decade is eroding. Some notable reasons are the increase in home schooling and the increase in school dropouts and suspensions in grades seven and eight. Washington's tests using enrollment in grades 1 through 6 in CMII to develop estimates have not been promising.

- ***Most estimation techniques lose accuracy during periods of change.*** Many models, like CMII, are built around "decade assumptions" or relationships and lack precision in capturing periods of rapid population change. The need to refine the "residual migration factor" in CMII addresses this issue. Similar problems exist in other methods. Sometimes there is a solution available, other times not. But it is always of value to just understand *when and why* an estimation method is not working.

- ***Many estimation methods are not designed to produce annual population change*.** CMII and Ratio Correlation are good examples. These methods produce change from the base census year to each estimate date. Developing annual population change from these estimates might be questioned. In CMII, the coverage error in the census counts is magnified at mid-decade by the particular age cohorts survived to school-age. Unless corrected, this causes distortions in annual population change. Yet we rely on these techniques to develop annual population change and migration. Population change and migration are vital to developing, tracking, and adjusting projection model assumptions.

- ***Population estimates are approximations*.** Pinpoint accuracy is not possible. Most methods have "weaknesses." On the other hand, carefully developed and tested procedures generally provide reasonable accuracy.