INTERIM POPULATION, HOUSEHOLD AND EMPLOYMENT
SMALL AREA FORECASTS TO 2010
AS COMPILED BY NORTHEASTERN ILLINOIS PLANNING COMMISSION STAFF

Introduction

This document is a summary description of the interim forecast allocations for surveyor quarter sections for 2010 prepared in late spring and early summer of 1994 by the staff of the Northeastern Illinois Planning Commission.

A key component to these forecasts was the regionwide forecast. Revised regional forecasts of population and employment to 2020 were approved by the Commission in March 1994. Companion forecasts for households were authorized for use by the Commission's Planning Committee in May 1994. Although used for the generation of the interim 2010 small area forecasts, the primary purpose for these new regional forecasts was to support the development of the small area results for 2020 in the context of the 2020 RTP.

Development of the regional employment forecasts was the first step. A standard cohort-component model then was used to generate a population appropriate to the employment level. The age/race results from the cohort component model became the basis for projections of household size, the population residing outside of households, and the total number of households.

Allocations to quarter sections for 2010 and intermediate years were prepared by resetting the base year used in the last forecast cycle to the 1990 Census for population and households and the 1990 NIPC estimates for employment, updating short term growth expectations based upon new residential and non-residential development, and adjusting the past forecasts of change to conform to the new regionwide control totals. After the development of DuPage county totals in cooperation with the County, DuPage staff generated the small area results that were used.

Due to funding and schedule decisions made by the CATS Work Program Committee for the 1994 fiscal year, the small area forecasts did not go through a process of review by local officials. In addition, given the time allowed to NIPC staff to generate these results, the forecast allocations were prepared by simple procedures that would not deflect the staff from what was viewed as the more critical problem of preparing the DRAM/EMPAL model for use in the development of the 2020 RTP. As a result, the Commission chose not to approve the interim small area forecasts but only to authorize them for use in TIP preparation and evaluation.

Summary of Results

Chart A summarizes the Commission-approved revised regional totals for population and employment. To 2010, the revised population total is virtually identical to the 2010 regional total endorsed in December 1990 (the revised total is only 10,800 people higher). The regional employment forecast is 211,500, or about 5%, higher than the December 1990 forecast. There seems to be a general consensus that the outlook for the region's economy relative to the rest of the country is brightening. The average annual increase in jobs to 2010 is projected at 1.11%. The comparable national forecast behind these regional results is 1.01%. On the other hand, the revised forecasts of the number of households is 178,600, or about 5%, less than the old forecast. This smaller total is due to a revision in household size forecasts which now assume that the rate of decline in household size will diminish substantially. Chart B compares the old and revised household size assumptions.

Table 1 summarizes the results of the quarter section allocations of total population, total employment and households for 2000 and 2010 when aggregated to city of Chicago and the six suburban counties. Charts C, D and E illustrate these forecasts with comparisons to the results completed in December 1990 for population, households and employment, respectively. Generally,

2

the new population forecasts shift population from Chicago to the suburbs other than in DuPage County. This shift is primarily due to the use of the 1990 Census as the revised forecast base. A secondary cause is housing development since 1990. Chicago still is assumed to enjoy a substantial share of the region's future housing growth, beyond that which is already "in the pipeline." On the employment side, the share of regional employment in suburban counties rose from the previous forecasts. Chart F illustrates the forecasts of employment by broad industrial grouping.

Regional Forecast Methodology

The regionwide employment forecasts were based on projections prepared by the Regional Economics Application Laboratory(REAL) – a joint effort of the Chicago Federal Reserve Bank and the University of Illinois at Urbana/Champaign. REAL has developed a combined econometric-input-output system for the Chicago six county region using DRI's forecasts for the nation as a whole. This model was used to generate several scenarios. A Technical Advisory Committee with special assistance from economists at the State's Department of Employment Security and at the University of Illinois at Chicago reviewed the scenarios and recommended the selection of a scenario assuming substantial gains in service sector productivity and an end to the historical decline in the region's share of overall national employment. The resulting forecast also compares favorably with independent projections developed by the Department of Employment Security and by the University of Illinois at Chicago using the REMI model. These comparisons are illustrated in Chart G.

An associated population total was then determined by constructing general assumptions about labor force participation, long term rates of unemployment, multiple job-holding, and the net flow of commuting non-residents into the region. Long term unemployment was asssumed to be 6%; 5% of working residents were assumed to hold

3

two jobs; 7.5% of the region's jobs were occupied by non-residents in 2020 (up from 3% in 1990). Labor force is discussed in greater detail below.

A cohort-component model was then run to reproduce this target population total. The cohort-component model used a single set of assumptions about fertility and mortality and alternative assumptions about migration by race/Spanish origin. Chart H illustates the total fertility rate and age specific birth rate assumptions. Hispanic fertility is assumed to diminish slightly while birth rates for all other groups is expected to remain constant at 1990 levels. These assumptions are consistent with those used in the November 1993 mid-range projections developed by the Bureau of the Census (Current Population Reports, P-25, No.1104). Life expectancy is assumed to improve slightly over the forecast period. Again, this assumption is drawn from the nationwide forecasts. Chart I illustrates a projected average number of births and deaths based on the two key migration assumption alternatives. Several migration alternatives by race and Spanish origin were evaluated. The two alternatives considered most likely are shown in Chart J. Both of these alternatives assume that annual Hispanic net inmigration increases slightly. Alternative K6 suggests substantial reductions in both Black and White/Other net outmigration. Alternative P7 suggests only modest declines in White/Other net outmigration and a reversal of Black net migration from outmigration to inmigration. Overall, in order to match the REAL employment forecasts, the large total annual net outmigration of population observed in the 1970s and 1980s must become a slight net population inmigration over the forecast span.

General labor force assumptions were then checked by using the age/race/sex results from the cohort-component model and applying age-specific labor force participation assumptions. Generally, female and minority participation is assumed to increase gradually. The most notable assumption is that after 2005, the participation

4

of population over age of 50, regardless of race or sex, will not fall. National labor force projections do not venture beyond 2005. The assumption used here was based upon a scenario where the baby boom population remains in the labor force longer than earlier generations. If this were not to occur and the employment projections remained valid, the result would be a substantially higher population forecast than was approved.

Household projections were derived by assuming that age/race-specific household headship rates remained constant at 1990 levels. The resulting stabilization of declines in household size was confirmed by checking against state level estimates of household size since 1990. In the twenty years prior to 1990, the region's average household size had fallen by 0.72% per year. The forecasts assume a decline of only 0.16% per year. Since 1990, household size has remained constant in Illinois. Nationwide forecasts from a variety of sources still suggest a decline, but only of a modest amount.

Quarter Section Allocation Methodology

NIPC and DuPage County staff developed a mutually acceptable DuPage County total forecast. DuPage County supplied the small area forecasts for areas within DuPage. After definitional adjustments by NIPC staff, these DuPage forecasts were subtracted from the regional totals for 2010 and selected intermediate years to generate a set of five county control totals for households and employment by CATS-requested categories. These totals were then allocated to each quarter section within the five county area.

Forecasts completed in 1990 were done using 1989 housing estimates, 1985 employment base and development database file current as of summer 1990. This set of forecasts resets the household base using 1990 estimates based on residential utility meters at the quarter section level and 1990 Census control results for the total number

of households by township. The 1990 employment base by quarter section is derived directly from NIPC's employment estimation project. Estimated change in households to 1992 plus the number of households in residential developments that are proposed, planned or under construction were added to the base number of households. Estimated jobs produced by square footage of non-residential developments that are proposed, planned, or under development were added to the quarter section employment base. The remaining change in households and employment by quarter section was calculated by factoring the 1990 forecasts of 1989 to 2010 household change and 1985 to 2010 employment change such that the resulting quarter section totals summed to the control totals for 2010 and the intermediate years. Total population was derived from the household allocations by assuming that household size as estimated in each quarter section for 1990 changed by the same percentage as for the region as a whole. The resulting uncontrolled population total was then adjusted to conform with the target regional population forecast.

An important key to understanding these forecast results and their policy implications is to understand the development of the previous set of forecasts used to guide the quarter section allocation. Appendix 1 describes the 1990 forecasts. These, in turn, were heavily dependent upon the 1987 forecasts, which in turn were dependent upon forecasts that drew their assumptions about transportation accessibility from as far back as the 1995 Regional Transportation Plan. The 1987 forecasts are summarized in Appendix 2. Both appendices are excerpted from materials developed to explain those forecasts. A key difference between the 1994 result and those generated in 1990 and 1987 is that the 1987 and 1990 results were subjected to substantial review and adjustment based upon negotiations with local officials. This is not unimportant as it provides a direct linkage to local government policy and response to possible implementation of regional policies (such as highway investments).

6

Forecasts Relationship to Policy

To understand the relevance of NIPC policy to these forecasts, it is necessary to understand that policy content in the NIPC forecast process is embedded in the results in several ways.

First, policy assumptions derived from NIPC policy statements can be used directly to drive the forecast model or allocation device. For example, land with potential use for open space, in flood plains, with environmentally sensitive features, or with little access to transportation, wastewater treatment, or municipal services can be assumed by models to develop at zero or very low densities. Such acreages can then be defined by changes in plans for open space, transportation, water quality and municipal development. Models used during the 1970s relied on such assumptions regardless of the probability for policy implementation. To some extent, the 1994 distributions of projected activity have their origins in these forecasts because systematic models have not been updated since then. Each new forecast cycle benefited from new estimates, new knowledge of development activity, new regional totals and new municipal official input but each was also heavily reliant on earlier forecasts which ultimately can be traced back to the mid 1970s. The 1994 update, then, does reflect some impact of the 1995 transportation plan, but the strength of that impact is unknown due to all the other influences of intervening forecast cycles.

Second, forecast results prior to endorsement by the Commission are subject to review against regional policy concerns. For example, a forecast result could be reviewed to determine if areas assumed for open space acquisition had been developed. Alternatives could be run to determine those that would avoid such development. For the most part, this approach to regional policy incorporation has been used through the forecast cycles of the 1980s.

Third, the involvement of local officials coupled with ongoing monitoring of residential and non-residential development provides an indication of market direction and response to the probable implementation of announced public expenditures and local planning policy. Ongoing adjustment of the forecasts in response to market activity, as is the case in the most recent forecast cycles, thus provides another indication of policy impact albeit mixed with market forces.

Finally, local involvement, per se, is a NIPC policy. Efforts to incorporate local concerns therefore is consistent with regional policy. This element of the NIPC forecast process has become increasingly important. The basic arguments behind this evolution are that, first, that because the forecast is being used to guide the expenditure of public money, it is appropriate that the numbers themselves are the product of a public process. The second key to the importance of local involvement is that the real goal of a forecast process that cannot know, apriori, that is is producing accurate results, is the generation of results that are widely supported for use in planning.

Max Dieber
January 10, 1995

Chart A

REVISED FORECASTS

POPULATION IN
NORTHEASTERN ILLINOIS

9,045,000
8,339,000
7,585,000
7,261,176
6,978,947
5,177,868

1950 1960 1970 1980 1990 2000 2010 2020

EMPLOYMENT IN
NORTHEASTERN ILLINOIS

5,280,000
4,791,000
4,197,000
3,845,000
3,184,000

1970 1980 1990 2000 2010 2020
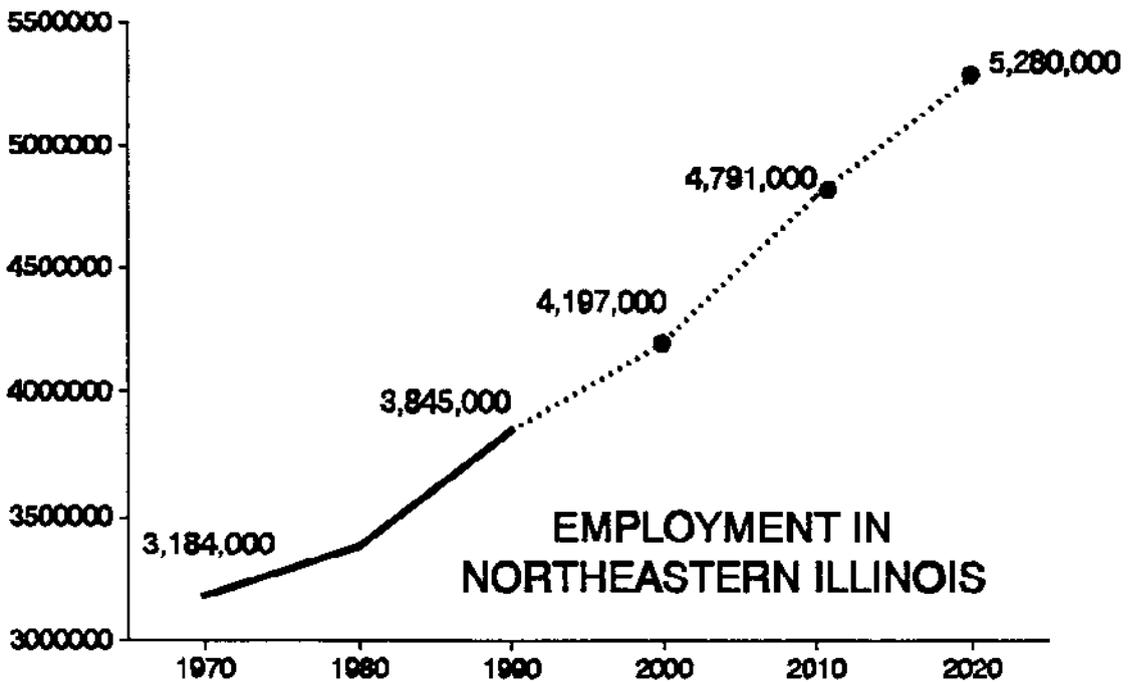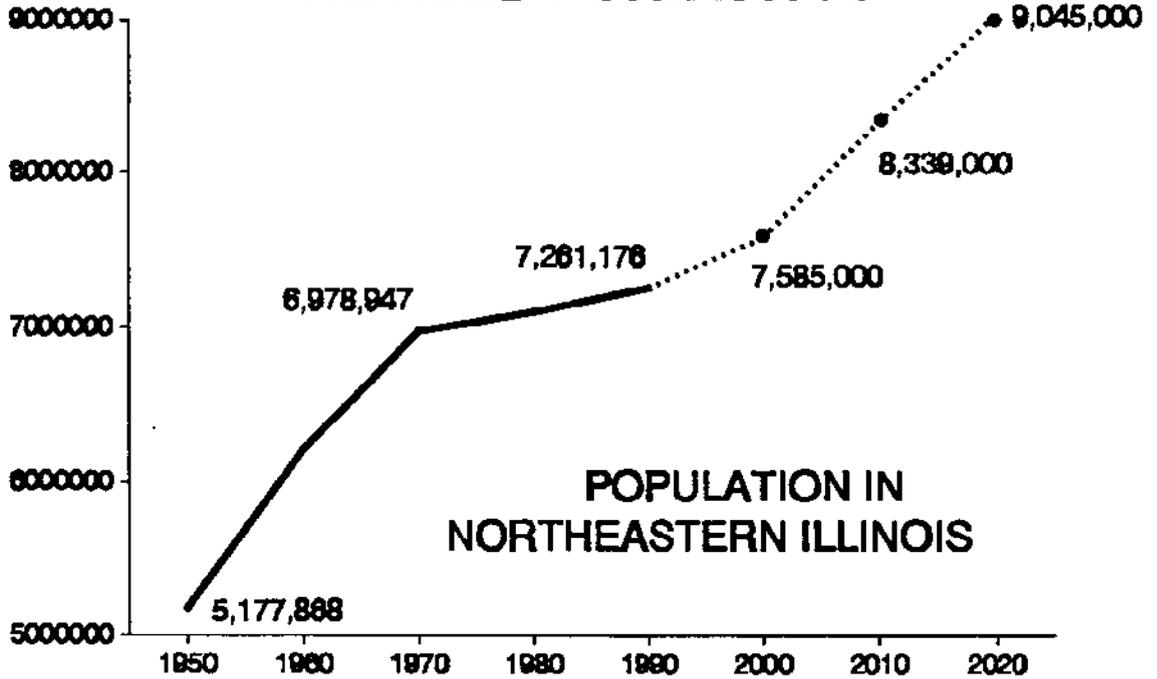
NORTHEASTERN ILLINOIS IS THE SIX COUNTY AREA INCLUDING
COOK, DUPAGE, KANE, LAKE, MCHENRY AND WILL COUNTIES

NORTHEASTERN ILLINOIS PLANNING COMMISSION   MARCH 1994

Chart B

HOUSEHOLD SIZE
1950 to 2020

ACTUAL

ENDORSED 12/90

REVISED 5/94

3.25

3.14

2.80

2.72

2.65

2.59

2.55

NORTHEASTERN ILLINOIS PLANNING COMMISSION   MAY 1994
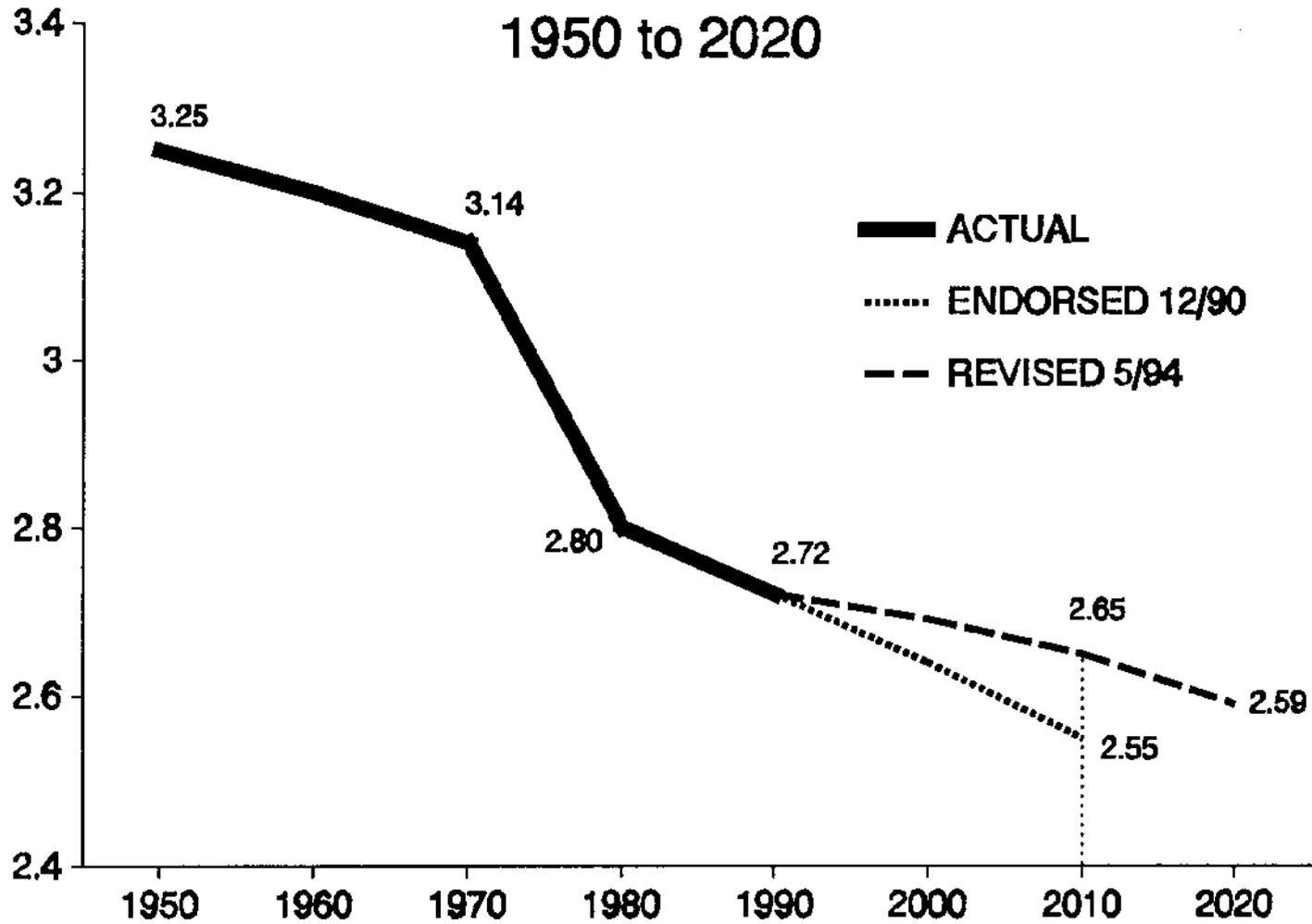
Chart C

POPULATION IN NORTHEASTERN ILLINOIS
1970, 1990, OLD & INTERIM 2010

Legend:
- 1970
- 1990
- 2010 (94)
- 2010 (90)

PERCENT SHARE OF REGION

Categories (x-axis): CHICAGO, SUB COOK, DUPAGE, KANE, LAKE, MCHENRY, WILL

CHICAGO: 48, 38, 35, 38
SUB COOK: 30, 32, 30, 29
DUPAGE: 7, 11, 12, 12
KANE: 4, 4, 6, 5
LAKE: 5, 7, 8, 8
MCHENRY: 2, 3, 3, 3
WILL: 4, 5, 6, 6

NIPC STAFF RESULT; NOT ENDORSED BY THE COMMISSION   SEPTEMBER 1994
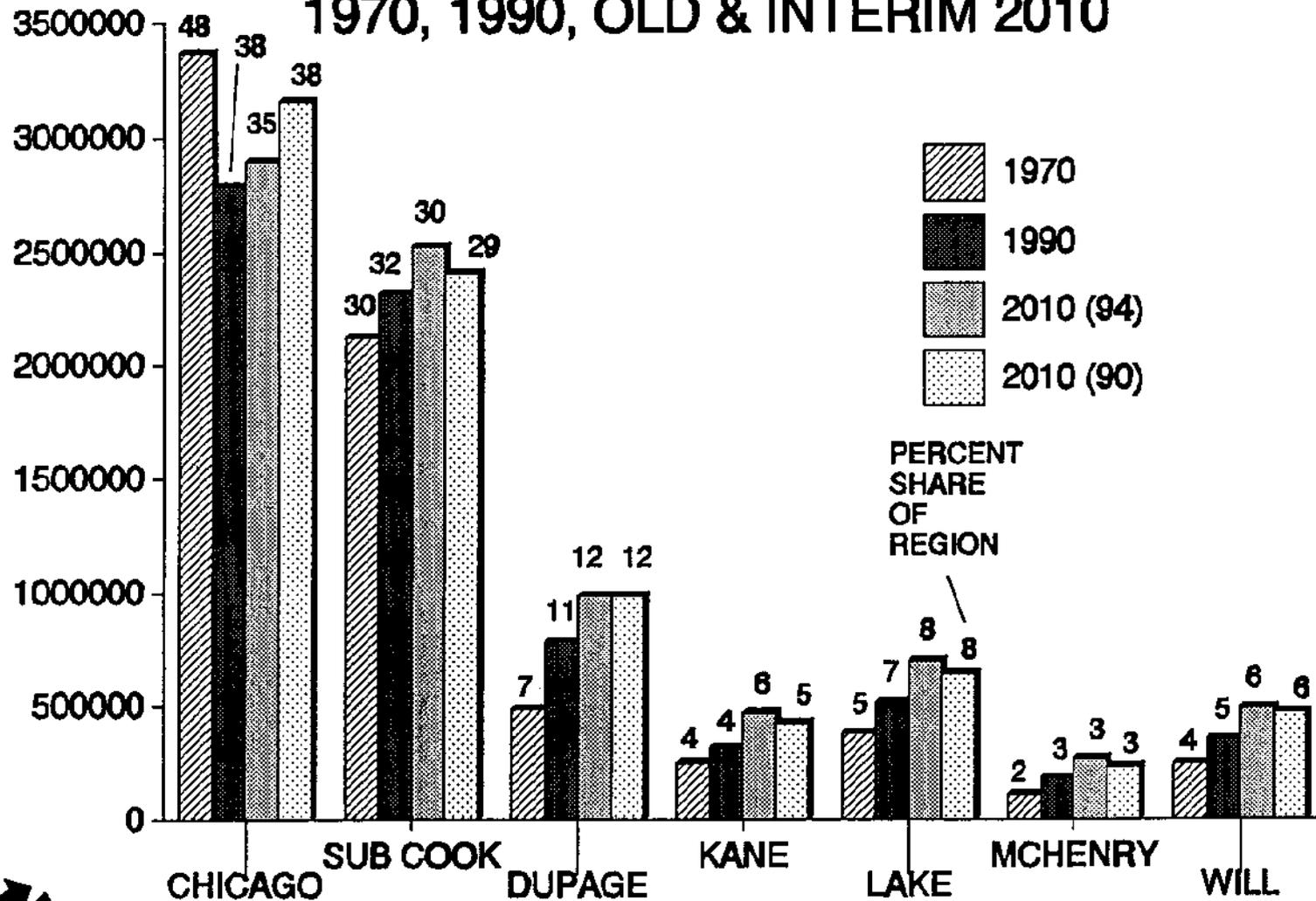
Chart D

HOUSEHOLDS IN NORTHEASTERN ILLINOIS
1970, 1990, OLD AND INTERIM 2010

Legend:
- 1970
- 1990
- 2010 (94)
- 2010 (90)

PERCENT
SHARE
OF
REGION

CHICAGO: 52, 39, 36, 39
SUB COOK: 29, 33, 31, 29
DUPAGE: 6, 11, 12, 11
KANE: 3, 4, 5, 5
LAKE: 5, 7, 8, 7
MCHENRY: 2, 2, 3, 3
WILL: 3, 4, 5, 5
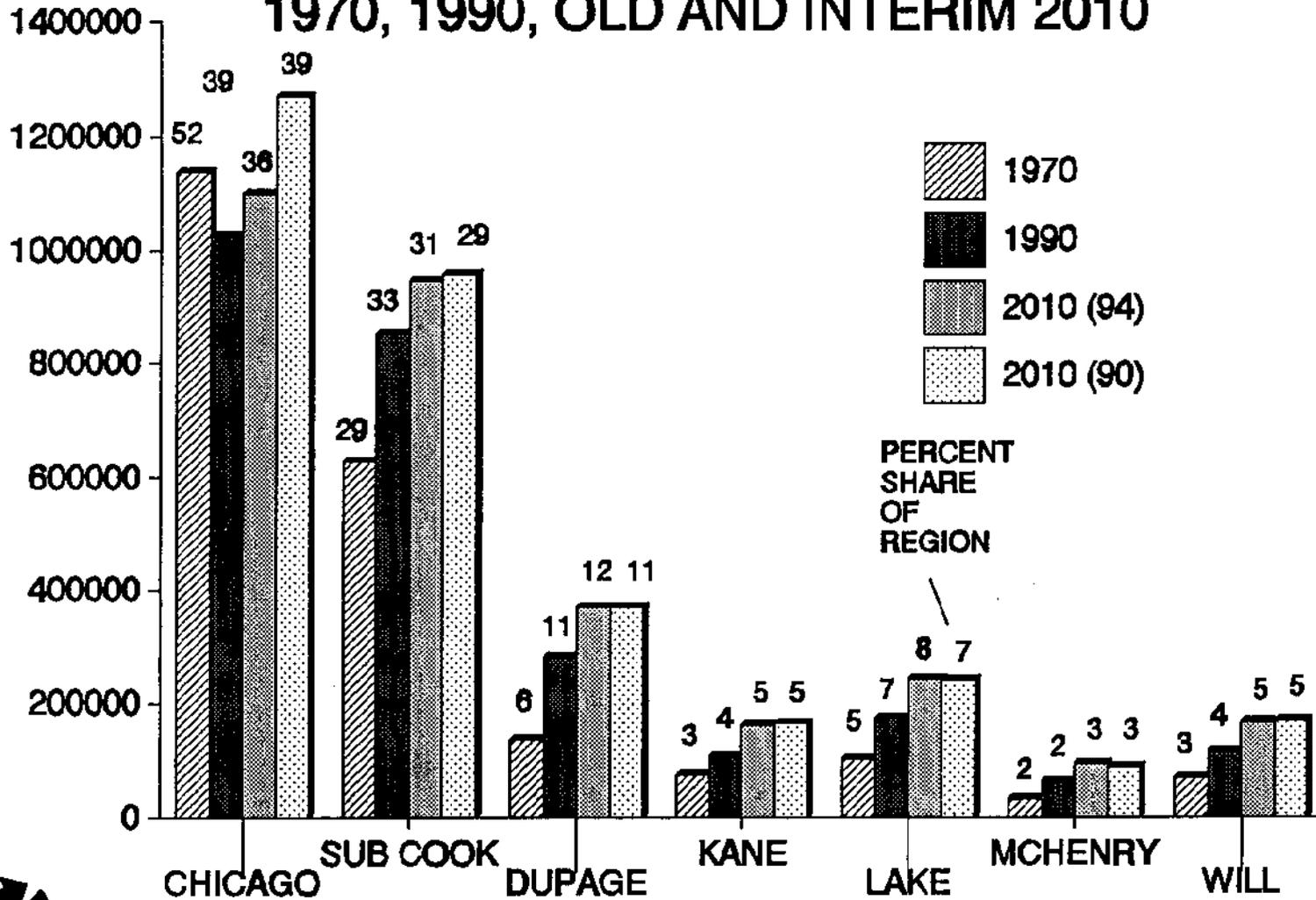
NIPC STAFF RESULT; NOT ENDORSED BY THE COMMISSION   SEPTEMBER 1994

Chart E

EMPLOYMENT IN NORTHEASTERN ILLINOIS
1970, 1990, OLD AND INTERIM 2010

Legend:
- 1970
- 1990
- 2010 (94)
- 2010 (90)

PERCENT SHARE OF REGION

Y-axis values: 0, 200000, 400000, 600000, 800000, 1000000, 1200000, 1400000, 1600000, 1800000, 2000000

Categories: CHICAGO, SUB COOK, DUPAGE, KANE, LAKE, MCHENRY, WILL

CHICAGO: 58, 38, 33, 37
SUB COOK: 26, 34, 35, 34
DUPAGE: 5, 14, 16, 14
KANE: 3, 4, 5, 4
LAKE: 4, 6, 7, 7
MCHENRY: 1, 2, 2, 2
WILL: 3, 3, 3, 3
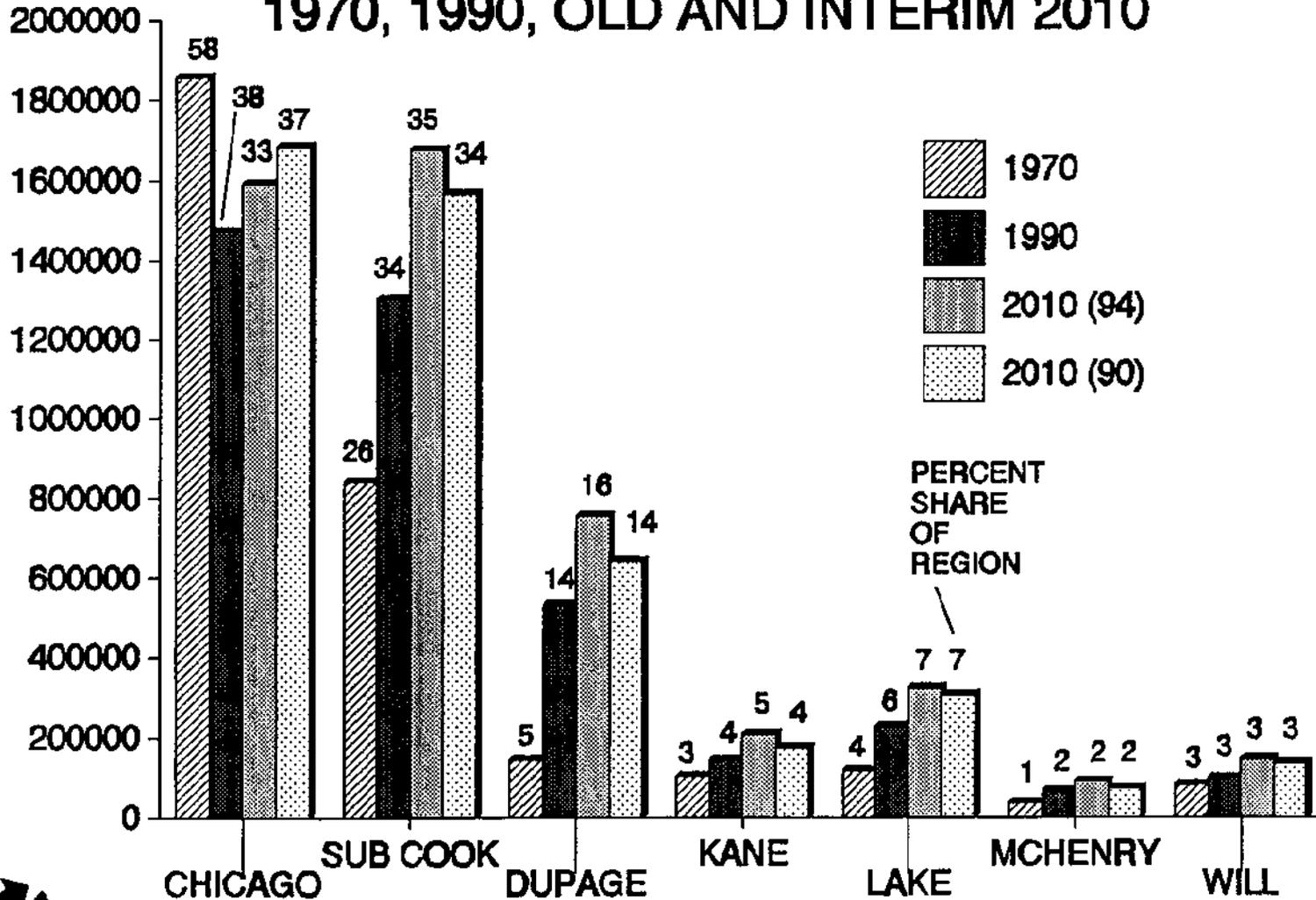
NIPC STAFF RESULT; NOT ENDORSED BY THE COMMISSION   SEPTEMBER 1994

Chart F

AVG ANNUAL % CHANGE IN EMPLOYMENT IN N.E.ILLINOIS

EMPLOYMENT BASED UPON BEA DEFINITIONS; FORECASTS BASED UPON REGIONAL ECONOMICS APPLICATIONS LABORATORY PROJECTIONS TO 2015

Legend:
- 1980-1990
- 1990-2010

Categories: RESOURCES, CONSTRUCT, MANUFACT, TCU, TRADE, FIRE, SERVICE, GOVT, TOTAL
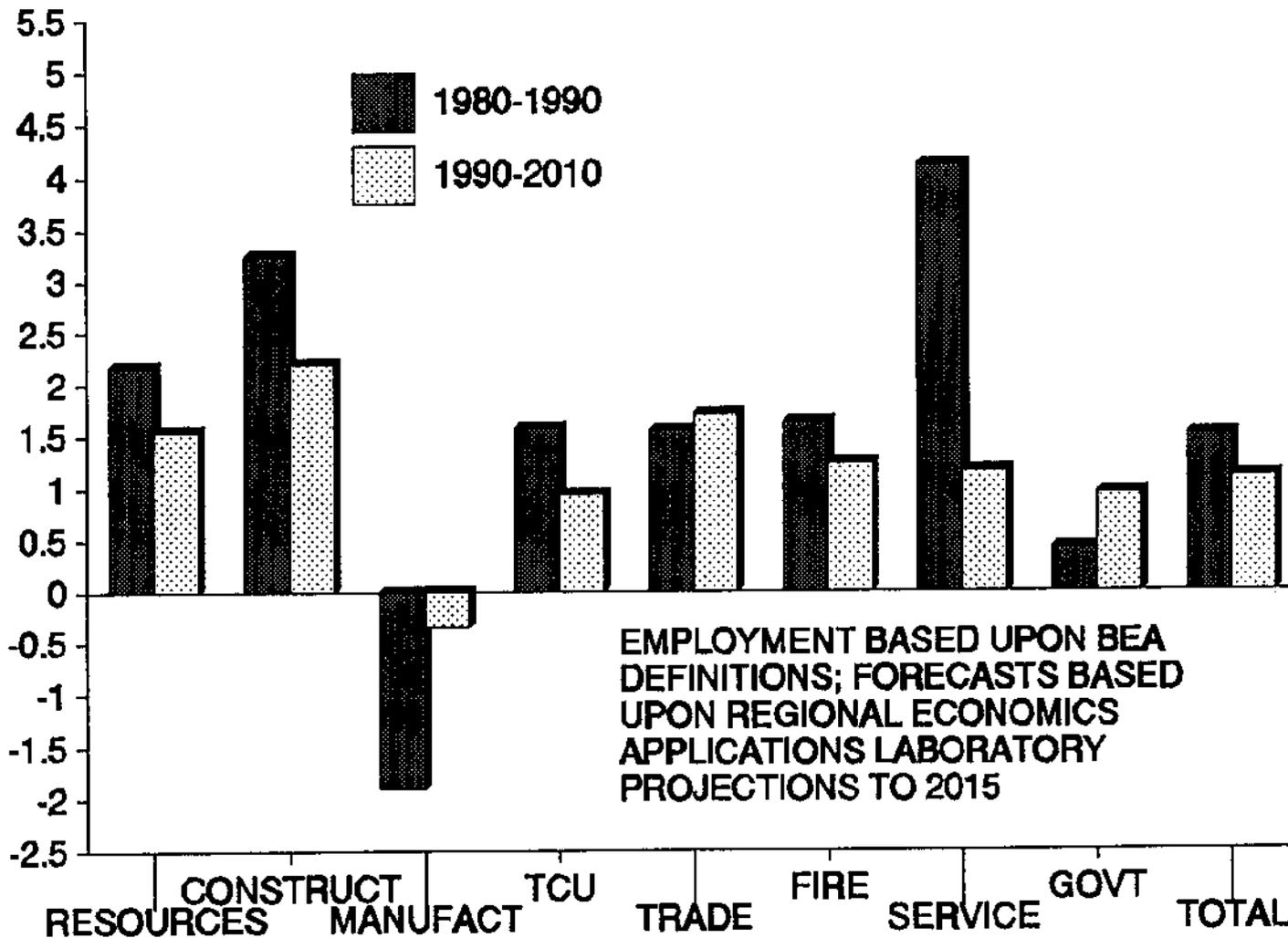
Chart G

AVERAGE ANNUAL CHANGE
IN REGIONAL EMPLOYMENT
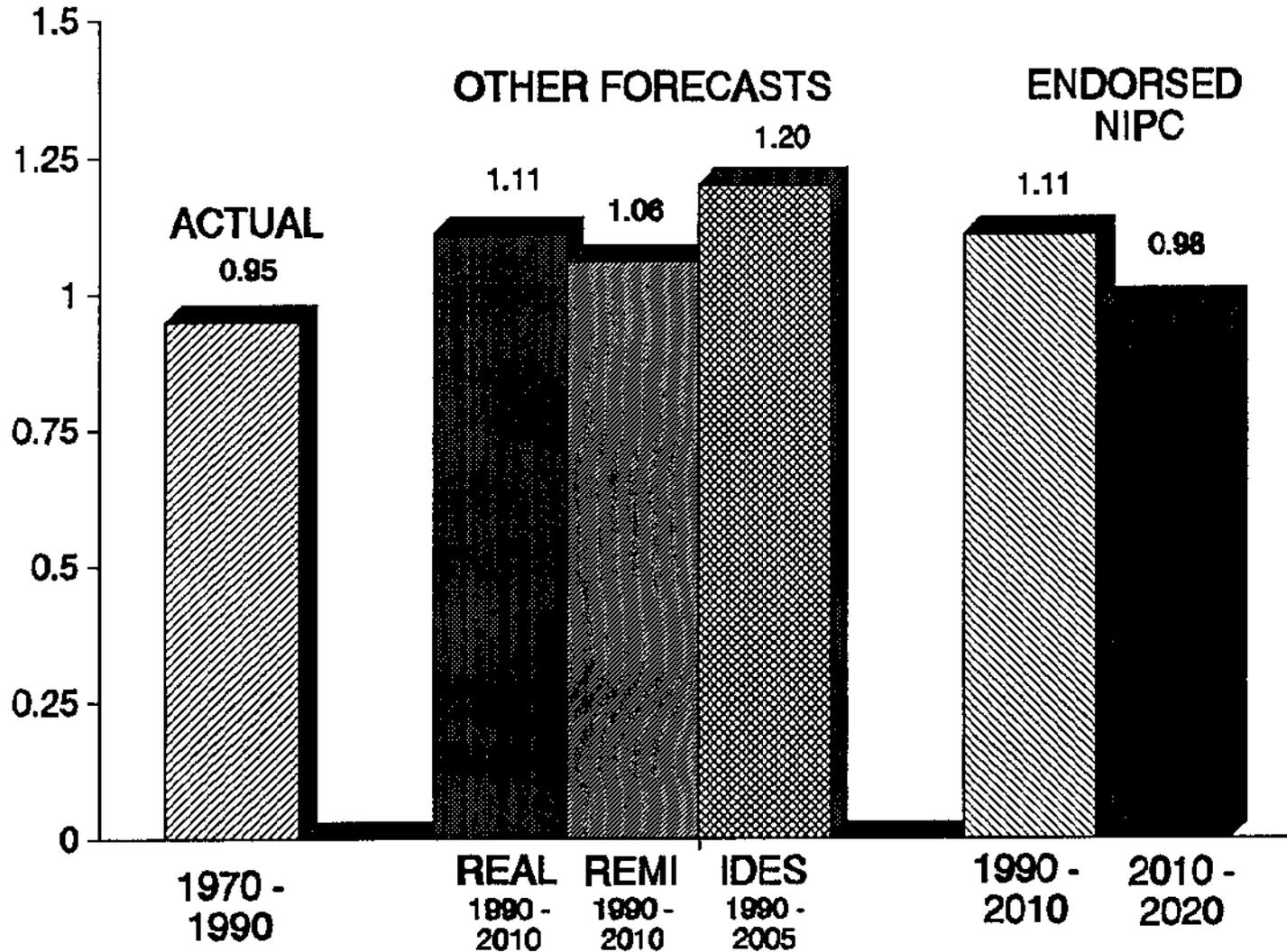
Chart H

AGE SPECIFIC BIRTH RATES BY SUB-GROUP IN NORTHEASTERN ILLINOIS, 1990, 2020

BIRTHS/1000 WOMEN

NON-HISP. BLACK 1990, 2020

HISPANIC 1990

HISPANIC 2020

NON-HISPANIC WHITE/OTHER 1990, 2020

AGE OF MOTHER

TOTAL FERTILITY RATE		
	1990	2020
NON-HISPANIC:		
WHITE/OTHER	1806	1806
BLACK	2840	2840
HISPANIC	2920	2717

Chart I

PROJECTED BIRTHS AND DEATHS
IN NORTHEASTERN ILLINOIS

NORTHEASTERN ILLINOIS PLANNING COMMISSION   MAY 1994

Chart J

FORECAST MIGRATION ALTERNATIVES
IN AVERAGE ANNUAL NET MIGRANTS
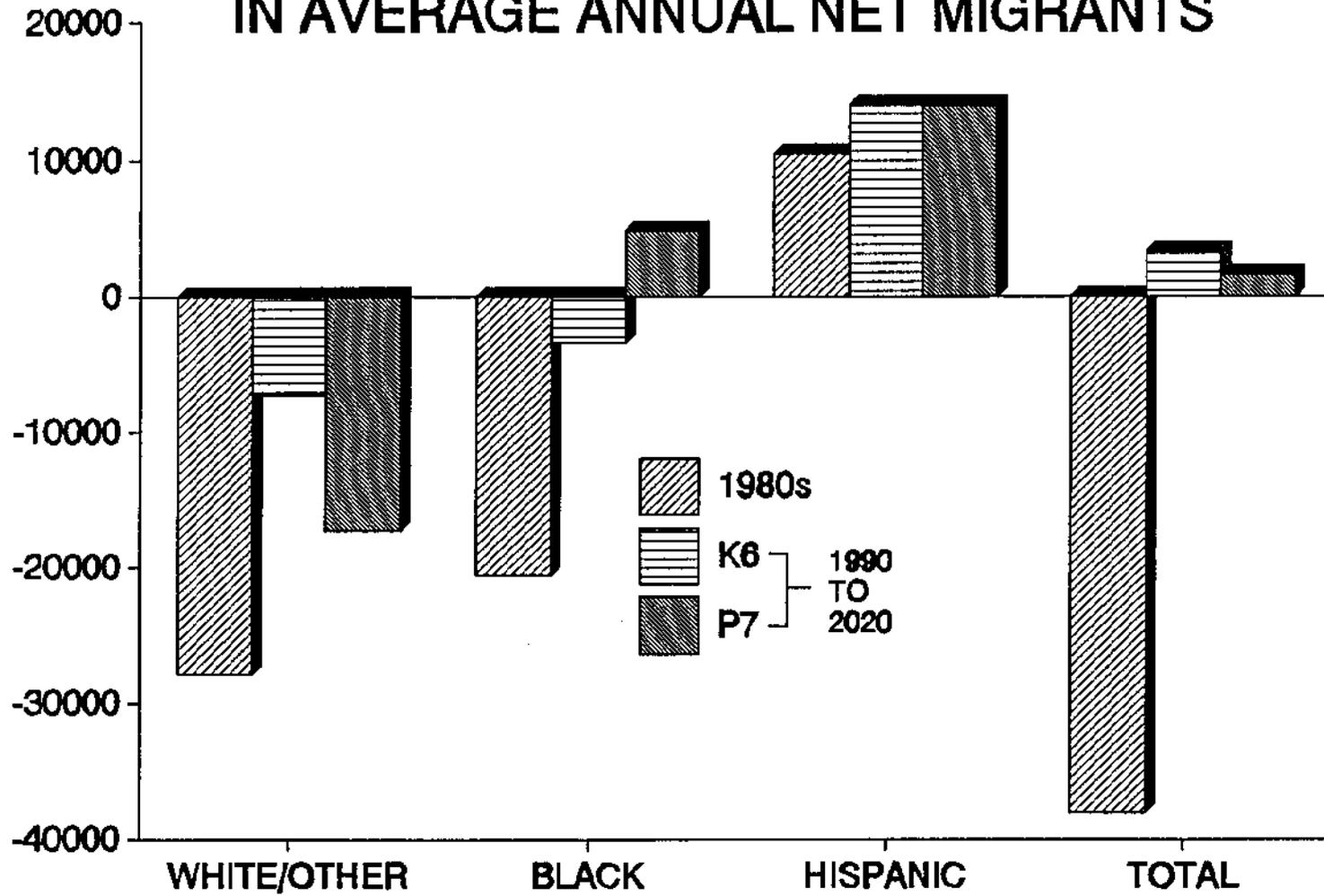
Appendix 1: 1990 Forecasts

<u>Socioeconomic Forecasts for Northeastern Illinois</u>

The forecasts of population, households and employment for northeastern Illinois are prepared by the Northeastern Illinois Planning Commission (NIPC). The most recent forecasts for the year 2010 were completed in December 1990, prior to the release of the 1990 Census results. In response to a request from the Illinois Department of Transportation for a rapid update of forecasts generated in 1987, these forecasts resulted from adjustments in selected portions of the region. These adjustments were made only where (1) local communities provided compelling documentation supporting a change, or (2) where other evidence existed showing the 1987 results to be incorrect.

The usual NIPC approach to the preparation of forecasts is to generate a regional constraining total and allocate it to successively smaller areas. The process increasingly relies on information and direction provided by local governments as the forecast geography gets smaller. In the 1990 cycle, however, the local forecasts were prepared without the constraint of a regional control total. In addition, adjustments to forecasts for the city of Chicago were not considered pending arrival of final 1990 Census totals. There are two important implications. The first is that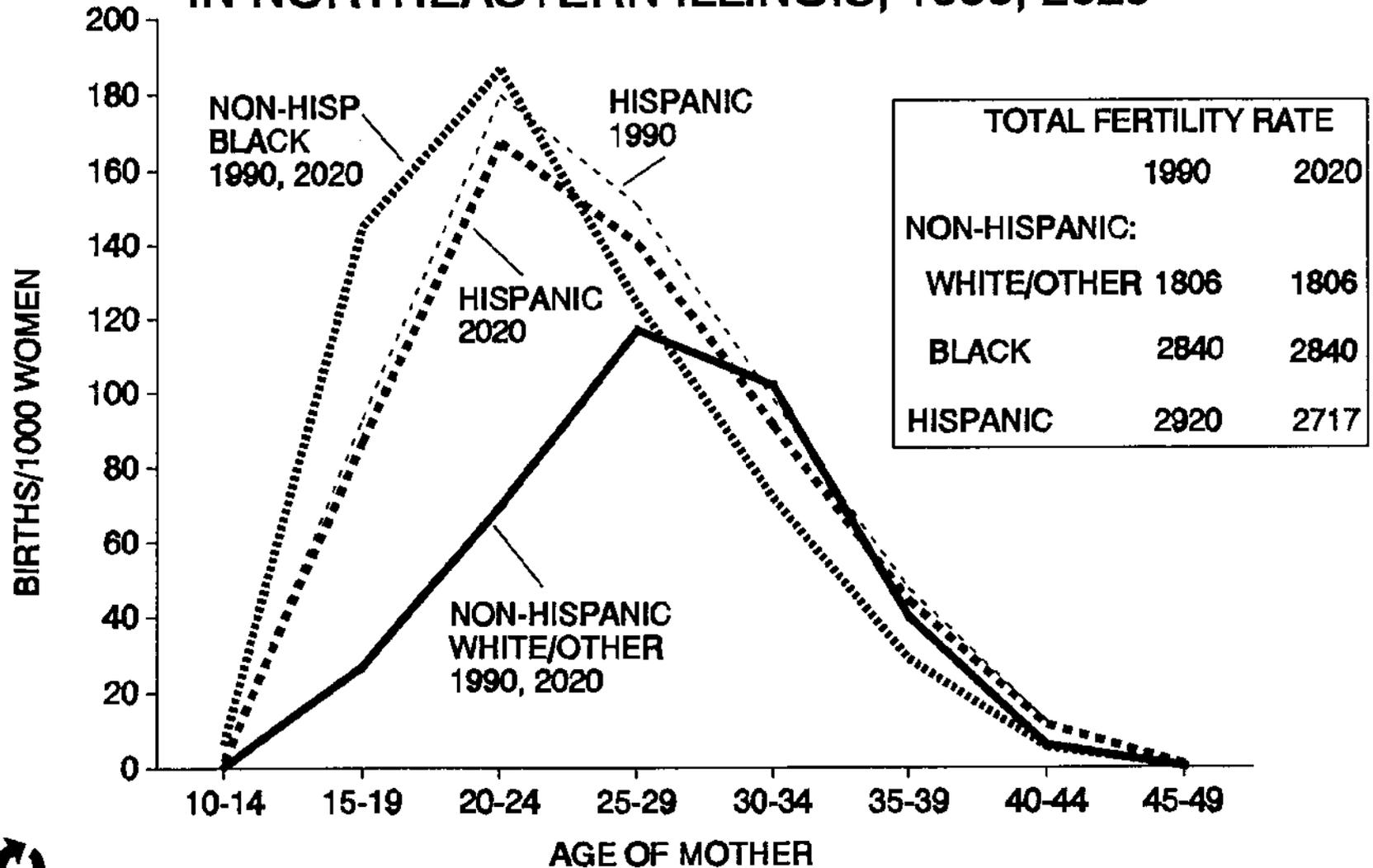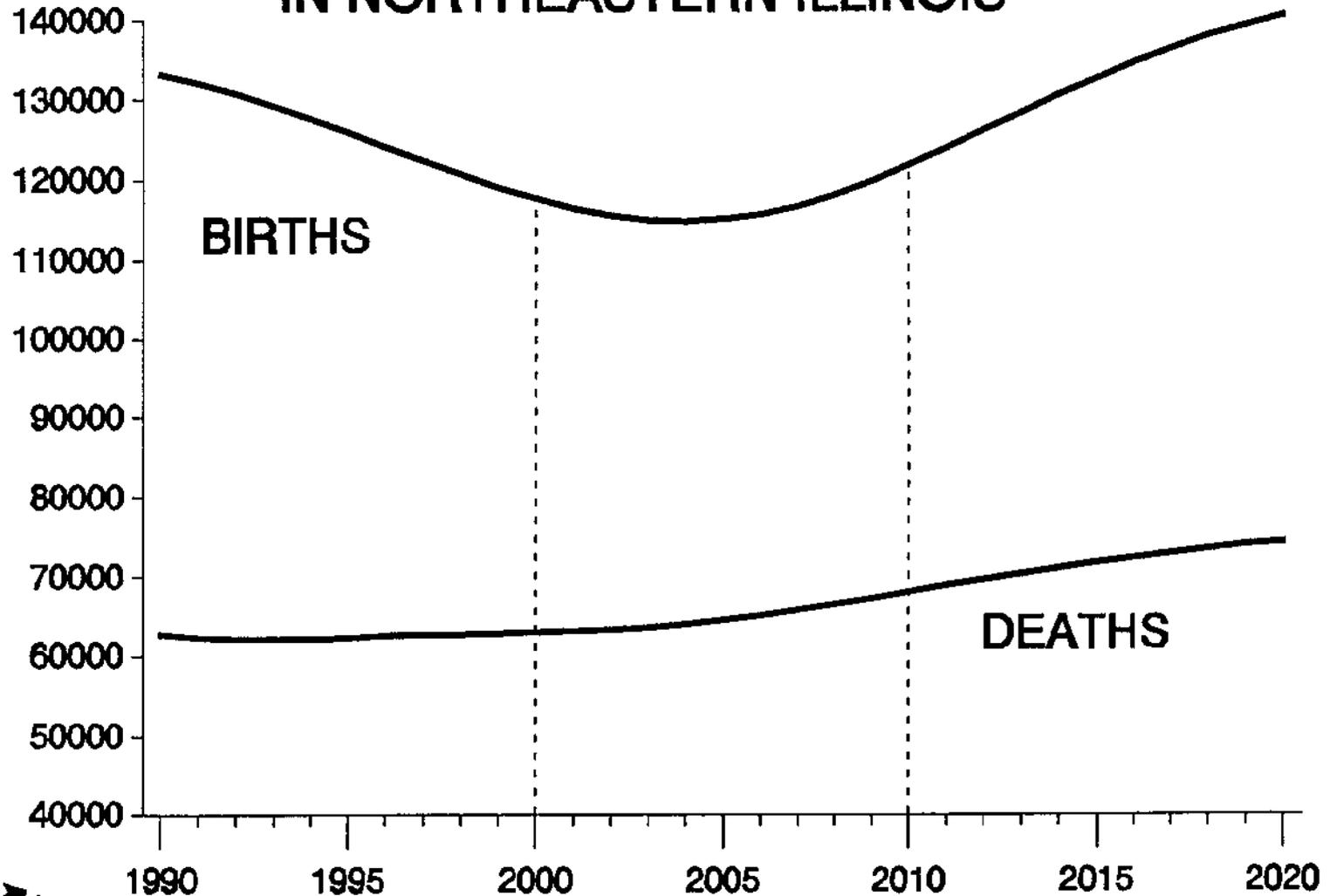 Commission endorsed the forecasts as "interim." The second, given the final Census data, is that the total for Chicago is probably too high, and therefore, so also is the regional total. Judged in the context of past trends, the suburban forecasts of population and households appear to be reasonable.

The 1990 forecast results are heavily dependent upon the methods used to generate forecasts in the 1987 cycle. NIPC Data Bulletin 88-1 describes these results and the methods used. The methodology chapters from this Bulletin are found on pages 26-34.

In the 1990 cycle, the revised household forecasts were generated by adjusting these previous forecasts given information concerning growth through 1989, residential development activity recorded in the Commission's monitoring program and requests for review from selected communities. Preliminary household results were provided to all municipalities in the region for consideration. Adjustments, if warranted, were made; results were reconciled to countywide household forecasts; household totals were converted to population using household size assumptions identical to those used in the 1987 cycle; and population and revised household totals were provided again to municipalities for further review.

The 1990 version of the 2010 employment forecasts were generated by adding on top of the previous 2010 forecasts, the amount of employment growth implied by the square footage of non-residential development activity shown in NIPC's monitoring files. These results proved to be consistent with the regionwide employment forecasts developed by Woods & Poole.

1990 POPULATION AND HOUSEHOLD FORECASTS

PRELIMINARY REVISION TO MUNICIPAL HOUSEHOLD FORECASTS

BASED ON DEVELOPMENT
DATABASE, CENSUS AND NIPC
ESTIMATES THROUGH 1989,
REQUESTS FOR REVIEW FROM
SELECTED COMMUNITIES,
RESULTS OF LAKE COUNTY
IMPACT FEE ANALYSIS

JUNE '90 LOCAL REVIEW

CONVERSION TO POPULATION

RECONCILIATION TO COUNTY TOTALS

SEPT '90 LOCAL REVIEW

MUNICIPAL AND
T-ZONE RESULTS
PREPARED BY
DUPAGE COUNTY

ALLOCATION TO QUARTER SECTION

ENDORSEMENT AS INTERIM RESULT

1987, 1990 EMPLOYMENT FORECASTS

1987:

REGL + COUNTY TOTALS
BASED ON IDES (80-95), NPA (95-10)

SHIFT/SHARE ALLOCATION
TO TOWNSHIPS

COUNTY STAFF REVIEW

DUPAGE
FORECAST
ALLOCATIONS

ALLOCATION TO QS
PROPORTIONAL TO PREVIOUS FCST

ENDORSEMENT OF COUNTY RESULTS

1990:

DEV. DATBASE REVIEW BY QS

LAKE
COUNTY
IMPACT FEE
STUDY

RESET LOSSES TO ZERO
EXCEPT IN MFG

RECONCILE TO W&P REGL TOTALS

DUPAGE
FORECAST
ALLOCATIONS

ENDORSE AS INTERIM COUNTY RESULTS

Appendix 2: 1987 Forecasts

DIAGRAM 5
POPULATION AND HOUSEHOLD
FORECAST PROCESS

```
┌─────────────────────────┐        ┌─────────────────────────┐
│   DETAILED REVIEW OF     │        │ DEVELOPMENT OF REGIONAL  │
│ PREVIOUS QUARTERSECTION  │        │    POPULATION TOTAL      │
│ RESULTS WITH MUNICIPAL-  │        │   INCLUDING REVIEW WITH  │
│ ITIES AND TOWNSHIPS IN   │        │ ILLINOIS BUREAU OF BUDGET│
│       WILL COUNTY        │        └─────────────────────────┘
└─────────────────────────┘
                          ┌───────────────────────────────────┐
                          │ GENERATION OF COUNTY/CITY OF CHICAGO│
                          │     POPULATION ALTERNATIVES        │
                          └───────────────────────────────────┘

      ┌─────────────────────────────────────┐        ┌──────────────────┐
      │ TRANSLATION OF POPULATION ALTERNATIVES│       │   SUBMITTAL OF    │
      │    INTO HOUSEHOLD ALTERNATIVES       │        │ PRELIMINARY TOTALS│
      └─────────────────────────────────────┘        │ TO CITY OF CHICAGO│
                                                       │ AND DUPAGE COUNTY │
         ┌─────────────────────────────────┐          └──────────────────┘
         │ ALLOCATION OF MID-RANGE HOUSEHOLD │
         │  ALTERNATIVES TO PRELIMINARY     │
         │ MUNICIPAL 2010 HOUSEHOLD TOTALS  │
         └─────────────────────────────────┘

┌──────────────────┐   ┌───────────────────────────────────────┐
│ DETAILED REVIEW OF│   │        LOCAL OFFICIAL REVIEW OF        │
│   MUNICIPAL AND   │   │ PRELIMINARY HOUSEHOLD MUNICIPAL FORECASTS│
│  QUARTERSECTION   │   │ AND 2010 MUNICIPAL BOUNDARY ASSUMPTIONS │
│   RESULTS WITH    │   │    (BEGINS WITH SEPT 2 REVIEW BY       │
│  MUNICIPALITIES IN│   │ PLANNING AND POLICY DEVELOPMENT COMMITTEE)│
│    KANE COUNTY    │   └───────────────────────────────────────┘
└──────────────────┘
                       ┌───────────────────────────────┐
                       │  STAFF ADJUSTMENTS BASED ON    │
                       │        LOCAL REVIEW            │
                       └───────────────────────────────┘

                 ┌───────────────────────────────────────┐
                 │ STAFF CONVERSION OF 2010 MUNICIPAL     │
                 │ HOUSEHOLD TOTALS TO POPULATION RESULTS │
                 │                 AND                    │
                 │   RECONCILIATION WITH TARGET           │
                 │   REGIONAL POPULATION TOTALS           │
                 └───────────────────────────────────────┘

                ┌───────────────────────────────────────┐
                │ SUBMITTAL OF STAFF RECOMMENDATION      │
                │  FOR MUNICIPAL POPULATION AND          │
                │   HOUSEHOLD FORECASTS TO               │        ┌──────────────────┐
                │ COMMISSION AND MUNICIPALITIES          │        │ MUNICIPAL TOTALS │
                └───────────────────────────────────────┘        │ RECOMMENDED BY   │
                                                                   │ CITY OF CHICAGO  │
                ┌───────────────────────────────────────┐        │ AND DUPAGE COUNTY│
                │     COMMISSION ENDORSEMENT             │        └──────────────────┘
                │    OF COUNTY AND MUNICIPAL             │
                │ 2010 POPULATION AND HOUSEHOLD TOTALS   │
                └───────────────────────────────────────┘

                    ┌───────────────────────────────┐
                    │ REVIEW OF FINAL REGIONAL TOTALS│
                    │    WITH STATE OF ILLINOIS      │
                    └───────────────────────────────┘
```

IV. Summary of Methodology: Population and Household Forecasts

A schematic summary of the steps followed to prepare the population and household forecasts is presented in Diagram 5. The central path from top to bottom summarizes the primary NIPC staff activities. Activities to the left and right of the central path indicate either the detailed participation of local governments in reviewing quartersection forecast allocation results prepared by NIPC (as noted for Will and Kane counties) or the preparation of the quartersection information by agencies other than NIPC (as was the case for the City of Chicago and DuPage County). Briefly stated, the technical procedure begins with the preparation of preliminary regional totals and progressively allocates these totals to smaller and smaller geographies. Results are reviewed at the municipal, and in some cases, the quartersection, level. This review is done through discussions with local officials as well as through internal technical evaluation. Necessary adjustments are made and the county and regional results are revised to accomodate this small-area fine tuning. The final step is the endorsement of the Commission's Planning and Policy Development Committee and the final approval of the Bureau of the Budget, State of Illinois.

The first step, the development of a preliminary regional total, was accomplished using the POPROJ cohort-component model.[4] Very simply, this model starts with the 1980 population distributed by age and gender. To such base data, births by gender expected during the forecast period are added, deaths by age and gender are subtracted, and net migrants by age and gender are added in the case of net inmigration and subtracted for net outmigration. In northeastern Illinois, birth rates were assumed to maintain a constant relationship to the "mid-range" birth rates projected by the Bureau of the Census for the U.S. as a whole. Regional

---

[4]This computer model is described in Techniques for Making Population Projections, Donald Bogue and Louis Rehling, University of Chicago, 1974.

life expectancy was assumed to reach U.S. life expectancy in the year 2025.[5] The net migration assumptions used to generate the preliminary regional total of 8,008,000 were based on the assumption of a continuation of a migration trend observed in the 1970 to 1985 period over the whole population. The result was that by the year 2010 the net migration from the region was projected to reach zero for both the white and non-white populations. The final forecast of 8,181,000 was based on identical fertility and mortality assumptions, but assumed that only the net outmigration of whites diminished to zero by 2010 while the net inmigration of nonwhites was maintained at the level observed in the 1970s. The case for this adjustment to the regional migration assumption was implied in the research conducted by the City of Chicago in the preparation of their recommended total for Chicago. These assumptions, used in the development of the final result, are summarized in Table 7 and Diagram 6.

The preliminary regional figure was reviewed with the Illinois Bureau of the Budget (IBOB). At the time, IBOB's own regional forecast total was only 0.3% less than the NIPC result.[6] Because this difference was so small, IBOB agreed that NIPC should proceed with the subregional process. This next step involved the development of alterative county and city of Chicago population results. These were generated using the same cohort-component model and similar assumptions as used in the preparation of the preliminary regional total. These assumptions and the alternative results are described in a September 1987 NIPC technical document, "Population in Northeastern Illinois: A Look Toward 2010." Mid-range population totals were then selected to serve as the basis for the preliminary municipal population and household totals.
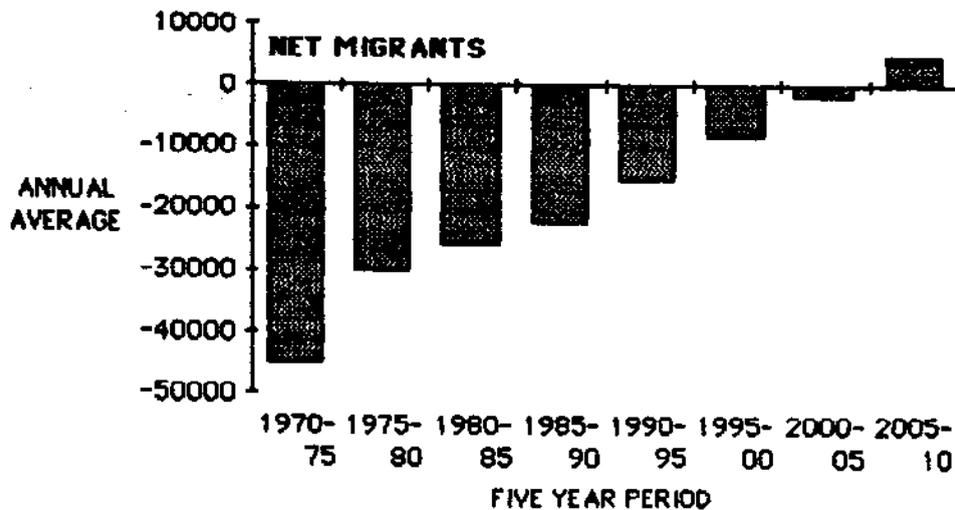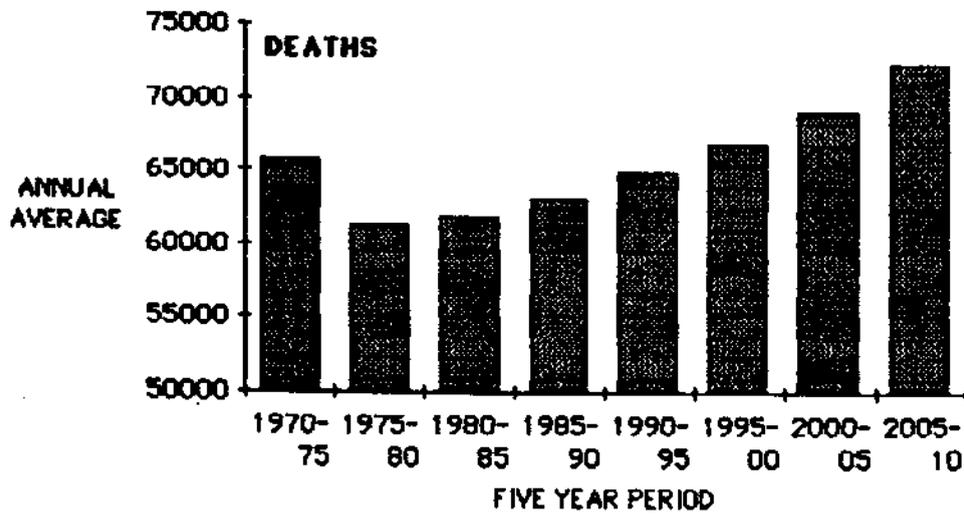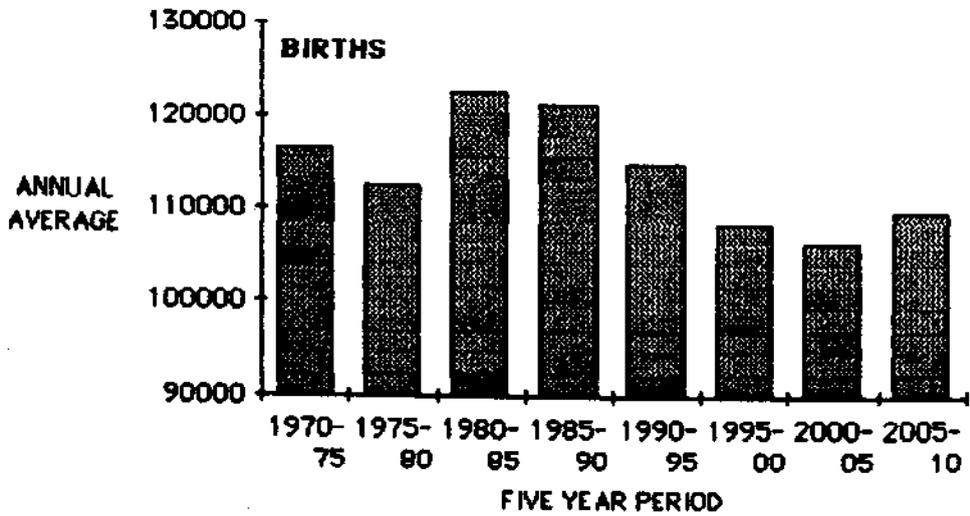
The mid-range population total for Chicago and each suburban county was translated into household forecasts through the use of year 2010 household size

---

[5]U.S. fertility and mortality assumptions are derived from Current Population Reports --- Projections of the Population of the United States by Age, Sex, and Race: 1983-2080, P25, No. 952, U.S. Bureau of the Census, May 1984.

[6]April 20, 1987 letter from Hoa Le, Bureau of the Budget, State of Illinois to Max Dieber, Director of Research Services, Northeastern Illinois Planning Commission.

TABLE 7

SUMMARY OF FERTILITY, MORTALITY, AND MIGRATION ASSUMPTIONS
USED IN CALCULATION OF DECEMBER 1987 REGIONAL TOTAL

AGE SPECIFIC BIRTH RATES
(per 1000 women)

FOR WOMEN AGED:	15-19	20-24	25-29	30-34	35-39	40-44	45-49	TFR*
TOTAL								
1980	58.1	112.8	116.5	72.1	25.3	5.0	0.3	1958.5
2010	55.3	115.4	126.7	88.3	30.2	4.8	0.2	2110.6
WHITE								
1980	37.2	101.1	120.9	75.0	25.0	4.6	0.2	1822.0
2010	37.2	105.5	132.7	91.6	30.7	4.6	0.4	2015.6
NON-WHITE								
1980	114.8	146.3	103.4	63.1	26.2	6.5	0.4	2327.0
2010	88.3	136.8	114.5	75.7	28.7	5.3	0.2	2260.3

*TFR -The Total Fertility Rate is the number of children 1000 women would give birth to during their lifetime

LIFE EXPECTANCY AT BIRTH
(years of life remaining)

	WHITE MALE	WHITE FEMALE	NON-WHITE MALE	NON-WHITE FEMALE
1970	68.6	75.6	60.8	69.6
1980	70.4	77.7	64.7	73.5
2010	74.4	81.8	70.0	79.1

AVERAGE ANNUAL NET MIGRATION

	1980-1985	1985-1990	1990-1995	1995-2000	2000-2005	2005-2010
TOTAL	-26013	-22554	-15650	-8781	-1925	4774
WHITE	-32973	-29514	-22610	-15741	-8885	-2186
NON-WHITE	6960	6960	6960	6960	6960	6960

DIAGRAM 6

COMPONENTS OF POPULATION CHANGE
IN NORTHEASTERN ILLINOIS

and population in group quarters[7] assumptions. For the most part, group quarters population was assumed to remain constant at its 1980 level. A continuing decline in household size was assumed but only due to changes in the age distribution. Table 8 presents the household size assumptions that finally emerged upon completion of the local official review process.

Outside of DuPage County, the resulting mid-range household totals were allocated to municipalities and the unincorporated portions of each county. These sub-county totals were calculated by controlling an adjusted version of the 1986 forecast file to the new preliminary county totals. The adjusted 1986 file incorporated post July 1986 revisions resulting from, first, continuing discussions with Will County local officials, and second, the discovery of errors in the 1980 quartersection base file. The preliminary municipal household totals were then sent to each municipality outside of DuPage County to solicit local official advice concerning not only the usefulness of the 2010 household forecast number but also the 2010 boundary assumptions related to it. In all, 71 municipalities, representing 63% of the region's non-DuPage County households in 1980, par-ticipated in this review process. Kane County municipalities also assisted in the review of the related quartersection forecast totals within their jurisdictions. The final household totals were developed on the basis of the local comments and NIPC staff evaluation of estimated 1980 to 1985 growth and estimated capacity. Population totals were then derived by applying household size assumptions for 2010. These assumptions were essentially the 2005 household size assumptions from the previous forecasts adjusted for, first, continuing household size decline in the 2005 to 2010 span, second, the need to control the final population results to the county target totals, and finally, any continuing input from communities concerning household size.

Within DuPage County, the municipal forecasts were generated by the DuPage County Development Department. 25 municipalities within the County par-ticipated in the evaluation of the forecasts.

---

[7]Group quarters population consists of those people living outside of households. These situations include college dorms, nursing homes, correctional institutions, military barracks, and so forth.

The final population and household totals for DuPage County and the City of Chicago were not produced by NIPC staff but were based on research conducted by those two jurisdictions. Nevertheless, these results were reviewed, and relative to the preliminary forecast ranges generated by NIPC, were found to represent a reasonable share of the regional forecast. Forecast users interested in documenting how those results were produced should contact the DuPage County Development Department or the Department of Planning, City of Chicago.[a]

TABLE 8

HOUSEHOLD SIZE IN NORTHEASTERN ILLINOIS

	1950	1960	1970	1980	2010
CHICAGO	3.18	3.01	2.91	2.71	2.45
SUBURBAN COOK	3.44	3.50	3.34	2.82	2.45
DUPAGE	3.49	3.66	3.56	2.92	2.66
KANE	3.24	3.34	3.26	2.92	2.55
LAKE	3.42	3.52	3.42	2.98	2.55
MCHENRY	3.37	3.45	3.35	2.99	2.61
WILL	3.42	3.44	3.43	3.07	2.67
N.E. ILLINOIS	3.25	3.20	3.14	2.80	2.50

---

[a]The Chicago forecasts, assumptions and methods are provided in a document entitled, Population Forecast for the City of Chicago, 1980-2010, Marie Bousfield, Department of Planning, City of Chicago, March 1988.

Methodology for the DuPage County forecasts is summarized in an attachment to a November 25, 1987 letter from Dalip Bammi, Director, DuPage County Development Department to Max Dieber, Director of Research Services, Northeastern Illinois Planning Commission.

V. Summary of Methodology: Employment Forecasts

The final county level employment forecasts were the product of a process that, first, developed preliminary alternative regional and county totals, second, allocated a selected regional and county total by employment category to surveyor townships, and finally, adjusted the county and regional totals on the basis of a review of the small area results. The Commission had hoped to base the final 2010 totals on an extrapolation of the final 1984-1995 county employment projections of the Illinois Department of Employment Security (IDES). These results, however, were not available prior to the Commission's approval of the forecasts presented here. Unfortunately, the wait for the IDES information limited the local official review period to a review by the county planning staffs of the preliminary alternatives and the final staff recommendation. The direct result of this limited opportunity for local evaluation was that the Commission's Planning and Policy Development Committee chose only to approve the county level results. Staff was directed to use these county level results as the basis for the development of employment forecast totals for sub-county areas.

Two draft alternative regional and county total employment forecasts for 2010 were prepared. Both were derived from an extrapolation of a preliminary 1984-1995 employment forecast prepared by the Illinois Department of Employment Security. The first step involved the translation of the preliminary IDES material into categories consistent with those required by the Chicago Area Transportation Study. The resulting 1995 totals by county and category were then extrapolated in two ways. The first was a direct extrapolation of the average annual rates of growth calculated from the 1984-1995 projections. The second approach forecast 1995 to 2010 growth based on the industry and county projections of the National Planning Association. The next step required the selection of a single preliminary total from these two draft alternatives. Because the IDES projection seemed to overstate the growth in retail and government and institutional employment relative to population growth in Cook County, the preferred preliminary total was defined by the second method for Cook County and the first method for the balance of the region.

This preferred preliminary total for each county and each of six industry categories was then allocated within counties to the surveyor townships using a standard shift/share methodology. This methodology seeks to describe employment change within any industrial grouping in any specific sub-county area as the sum of two forces. The first force, the "share" component, suggests that regardless of sub-county location, all employment in a specific industrial grouping will grow at the same rate projected for that industrial grouping for the county as a whole. The second force, the "shift" component, adjusts the first force to recognize geographic differentials within the county.

The share component was calculated by using the preliminary county by county forecast for each category; the shift was determined by one of three approaches. In the first approach, applied to the shift element calculated for manufacturing and for transportation, communication, utilities and wholesale trade (TCUW), the shift was based on the township forecasts prepared in the previous[9] NIPC forecasts for each of the two categories adjusted for known 1980 to 1985 change. The second approach was applied to the distribution of retail and government/institutional employment. Here the shift element was defined as equivalent to the relative rate of projected growth in households by township for the 1985 to 2010 span. In the case of retail employment, the preliminary county results were then re-adjusted to also reflect relative county by county growth in households. The third approach was applied to the shift element for finance, insurance, real estate, services and other employment. For these industries the shift rate for each township was defined as the equally-weighted rate of growth in households and the projected growth in manufacturing and TCUW.

As with the population and household forecasts, the employment numbers for projected changes from 1985 to 2010 prepared by the DuPage County Development Department were substituted for the results generated by NIPC staff. Although there were some significant differences in the category totals, the total employment results for the county were consistent.

---

[9]The previous employment forecast was prepared in 1983.