

New Jersey Highlands Water Protection and Planning Council

Peer Review of the Fiscal Impact Assessment Report for the Highlands Region

Release Date: January 19, 2017

Abstract

This report provides a peer review of the *Fiscal Impact Assessment Report for the Highlands Region* (FIA). The three-part FIA, conducted by PlaceWorks on behalf of the Highlands Council, explored whether passage of the Highlands Act and adoption of the associated Highlands Regional Master Plan (RMP) had a detectable effect on employment, real estate markets and fiscal outcomes for municipalities in the Highlands Region. The purpose of this report is to provide an independent peer review of the methods and research approaches used in the FIA in order to determine whether its central conclusions – that the Highlands Act and RMP had little effect on regional economic and fiscal outcomes – is supported by the data and analysis conducted for the study.



[page intentionally left blank]

Statutory Platform, Purpose and Funding

As part of its effort to establish an RMP Monitoring Program, the Highlands Council commissioned the consultancy PlaceWorks to assess the economic and fiscal impacts of the Highlands Act and RMP on the municipalities of the Highlands Region. That report – the *Fiscal Impact Assessment of the Highlands Water Protection and Planning Act and RMP (FIA)* – comprises three sections: “Regional Economic Evaluation of the Highlands Region”, “Socioeconomic and Real Estate Analysis of the Highlands Region”, and “Fiscal and Financial Analysis of the Highlands Region.”

The Highlands Council commissioned a team at the Edward J. Bloustein School of Planning and Public Policy at Rutgers University to conduct a peer review of the FIA. The purpose of the peer review – provided in this document – is to provide an independent review of the methods and research approaches used in the FIA. The peer review assesses whether the FIA’s conclusions are supported by the data and analytical techniques used in the study. In addition, the Rutgers team was tasked with making recommendations for economic and other metrics to be tracked as part of the ongoing RMP Monitoring Program.

The peer review and metric recommendations are intended for use by the Highland Council and other interested parties as a means of providing a deeper understanding of and insight into the findings of the FIA, in order to further inform decision-making regarding the implementation of the Act, RMP and RMP Monitoring Program.

List of Preparers

This document was prepared by the following firm(s)/individual(s) with project management from Highlands Council technical staff.

Edward J. Bloustein School of Planning and Public Policy
Rutgers, The State University of New Jersey

Study team:

Will Irving

Michael L. Lahr

Marc Pfeiffer

Maia De la Calle

Table of Contents

Statutory Platform, Purpose and Funding	i
List of Preparers.....	ii
Chapter 1 – Introduction	1
Summary of Findings.....	2
Study Approach	2
Organization of the Report.....	3
Chapter 2 – Regional Economic Analysis of the Highlands Region.....	4
General Context	4
1. Demographic Trends.....	4
2. The Great Recession.....	4
3. Implementation of the RMP	5
Research Approach	5
1. Employment as an Indicator of Economic Activity.....	5
2. Carrying Capacity	6
3. Hypotheses should be clearly stated and justified.....	6
4. Time Frame	7
Methodology	7
1. Comparison Regions.....	7
2. Arbitrary cutoffs for density.....	9
3. Unsupported Inferences.....	9
4. Use of Regression Analysis.....	9
Data	10
Organization and Accessibility.....	10
1. Additional Data and Tables	10
2. Explanation/Verification of Calculations	10
Chapter 3 – Socioeconomic and Real Estate Analysis of the Highlands Region.....	11
General Context	11
Research Approach	11
1. Limited Building Permits Analysis.....	11
2. Carrying Capacity	11
3. Real Estate Analysis Hypotheses	12
4. Further Explanation Needed for Socioeconomic Analysis	13
Methodology	14
Unsupported Inferences/Inaccurate Representations.....	14
Data	14
Organization and Accessibility.....	15
1. Introductory Material for Socioeconomic Evaluation	15
2. Missing Analysis	15
3. Graphs Difficult to Interpret.....	15
4. Chapter 8 Conclusion.....	16
Chapter 4 – Fiscal and Financial Analysis of the Highlands Region	17
General Context	17
Research Approach	17
1. Demand/Cost Side of the Fiscal Equation.....	17
2. Use of Assessed Value in the Analysis.....	18
3. Unclear Hypotheses	18
4. Time Frame	18
Methodology	19
1. Use of Tax Revenue Data.....	19

2. Inconsistent Table Data – Weighted Averages and Weighted Least Squares Regression.....	19
3. Description of R ² Statistics Unclear	20
4. Robustness/Stability of Coefficients.....	20
5. Endogeneity of Construction Value Variable.....	20
6. GDP Price Deflator.....	21
Data	21
Organization and Accessibility.....	21
Chapter 5 – Metrics.....	23
Metrics for Future Studies	23
<i>Highlands Municipal Factbook</i> Recommendations	23
Long-Term Forecasting Feasibility.....	24
Chapter 6 - Conclusion	25
References.....	26

Chapter 1 – Introduction

This report provides a peer review of the *Fiscal Impact Assessment Report for the Highlands Region* (FIA) conducted by the California-based planning and design firm PlaceWorks on behalf of the Highlands Council. The three-part FIA explored whether passage of the Highlands Act and adoption of the associated Highlands Regional Master Plan (RMP) had any effect on employment, real estate markets and fiscal outcomes for municipalities in the Highlands Region. This peer review was requested by the Highlands Council to subject the findings of the FIA to additional analytical scrutiny and to provide insight and commentary from analysts with local (i.e., New Jersey) expertise. The report thus provides an independent review of the methods and research approaches used in the FIA in order to determine whether its central conclusion – that the Highlands Act and RMP had little to no effect on regional economic and fiscal outcomes – is supported by the data and analysis conducted for the study.

The FIA was divided into three distinct chapters:

1. “Regional Economic Evaluation of the Highlands Region” analyzes whether the Act and RMP have affected employment in the Highlands Region, examining employment trends over time in municipalities of the Highlands Region and of selected comparison regions.
2. “Socioeconomic and Real Estate Analysis of the Highlands Region” explores whether trends in construction and real estate market activity, as well as household and demographic characteristics, have diverged from those of selected comparison regions following passage of the Highlands Act and passage of the RMP.
3. “Fiscal and Financial Analysis of the Highlands Region” examines changes in property values and property tax revenues over time, and whether these trends in the Highlands Region have diverged from those of comparison regions due to the provisions of the Act and RMP.

Along with the review of each of these chapters, the Rutgers team was also asked to review the proposed metrics for the Highlands Municipal Factbook in order to assess the extent to which they are sufficient to capture the impact of the Highlands Act and RMP on regional and local economic and land-use patterns over time. In addition, the team was asked, in reviewing the proposed metrics and the FIA, to suggest any additional metrics that would be useful to track, and whether it would be feasible to use this data to forecast the trends examined in the FIA over a ten-year horizon.

Summary of Findings

The *Fiscal Impact Assessment Report* prepared by PlaceWorks represents a significant effort to collect, synthesize, analyze and interpret a large amount of data in a variety of ways. The report is both informative and useful, particularly the sections that draw on data specific to the different parts of the Highlands Region (preservation, planning, conforming planning, etc.). Moreover, it is largely responsive to the scope of services outlined by the Highlands Council. Still, the Rutgers team found a number of ways in which the report could be improved. Adopting alternative methods to track and analyze data over coming years would lend further validity, accuracy and applicability to future findings. Furthermore, there are a number of confounding factors – including the Great Recession, developing regional demographic shifts and the slow pace of RMP implementation – that, at this stage, render it very difficult to detect potential impacts of the Act and RMP. In addition, while this document reviews and analyzes the findings and methods presented in the *Fiscal Impact Assessment Report*, the authors did not have access to the underlying analysis worksheets used for the statistical tests reported in the FIA, and a re-creation of the analysis described in the FIA is beyond the scope of this project.

Thus, while we cannot definitively state that the overall conclusions of the FIA – i.e., that the Highlands Act and RMP have generally had little to no impact on the economy of the Highlands Region – are incorrect, there are a number of areas of concern that we believe weaken the basis for this conclusion. It is important to note that many of these areas of concern arise not from the particular analytical methods used in the FIA, but rather from the presence of the aforementioned confounding factors that significantly complicate the task of determining the effects of implementation of the Act and RMP. Given the limitations on data and methodology, we feel that the response to the question of whether the Act and RMP have affected the economic trajectory of the Highlands Region might more appropriately be phrased with a qualified “not yet in a detectable way.” That is, effects that may have occurred by this point may be obscured or deferred by effects of the Great Recession, delayed by the slow rate of RMP conformance in the Planning Areas, or undetectable given the data available and the general approach and testing methods used in the analysis.

Study Approach

The Rutgers team identified five separate but overlapping thematic categories to guide our review of the FIA. These categories are intended to address key factors underlying the analysis presented in the FIA that could have bearing on its conclusions and their representation or interpretation. The five categories are:

1. **General Context.** These are factors such as broad economic or demographic trends not directly addressed or included in the analysis but which could complicate the analysis or impact its findings.
2. **Research Approach.** This category of review examines whether the analyses and techniques used in the FIA in fact capture or reflect phenomena and trends that support their conclusions. The Rutgers team asked whether hypotheses were clearly defined and stated, and whether appropriate methods were chosen to test those hypotheses. That is, were the questions asked

by the analysis well designed to determine if the Act and RMP have had an effect, and were the appropriate methods used to answer those questions.

3. **Methodology.** The Rutgers team reviewed the analytical and statistical techniques used in the FIA to determine whether appropriate tests were correctly applied and interpreted in evaluating and comparing the statistical significance of economic, fiscal, demographic and real-estate trends.
4. **Data.** The Rutgers team reviewed the data sources used in the FIA to ensure that the most appropriate, current, consistently measured data from the most reliable governmental and private sector sources were used. Where applicable, recommendations for additional or alternative data sources are provided.
5. **Organization and Accessibility.** In reviewing the FIA, the Rutgers team sought to identify areas where the organization or presentation of the data, analysis and findings could be improved. While not germane to the quality of the analysis per se, it is important that the findings and analytical support thereof be as transparent and accessible as possible.

Organization of the Report

The peer review is organized into five chapters. Chapters 2-4 cover the first three chapters of the FIA, respectively. Each of these chapters is divided into sub-sections addressing the thematic categories described above. Chapter 5 provides commentary on the proposed metrics for the Highlands Region Factbook and suggestions for additional metrics, and assesses the feasibility of forecasting long-term trends on the basis of available data. Chapter 6 provides concluding remarks regarding the overall FIA and its findings.

Chapter 2 – Regional Economic Analysis of the Highlands Region

General Context

The general approach of the Regional Economic Analysis of the Highlands Region is to compare employment trends in the Highlands Region with those in several comparison areas to determine if there are statistically significant differences in their rates of growth or decline. The analysis concludes that the Act and RMP have had little to no impact on the economy of the region. However, there are a number of broader trends and other factors that need to be carefully considered both theoretically and methodologically in order to determine whether any difference in growth rates across geographies can be distinguished from these trends. While the analysis acknowledges some of these factors, it does not always account for their possible influence. The effects of these factors are relevant to all three sections of the FIA.

1. Demographic Trends

Over the past several years, there has been growing evidence of out-migration from outlying areas toward cities, both in terms of population and commercial entities (Hughes & Seneca, 2014). Within the four-state, 35-county metropolitan region centered on Manhattan, the counties that have lost population post-2010 have been located on the metropolitan perimeter or edge: Pike and Monroe in Pennsylvania; Sullivan, Ulster, Dutchess and Putnam in New York; Sussex, Warren and Hunterdon in New Jersey; and Litchfield and New Haven in Connecticut. All of these were fast growing areas in the late 20th century, while counties in the urban core were experiencing population declines. Currently, the suburban counties registering the strongest growth are those located closest to New York City. Changing lifestyles and employment choices among both millennials and retiring baby-boomers appear to be resulting in a general shift from suburban and exurban areas toward central cities. This is particularly pronounced in the New York-centered metropolitan region. It is a trend independent of the Highlands Region (although it affects it), and undoubtedly adds statistical “noise” to any conclusions regarding short- to medium-term impacts of the Highlands Act and RMP. That is, broad population trends make it more difficult to detect independent impacts of the Act and RMP on the economy and demographics of the Highlands Region, even if such impacts exist. For example, comparisons of employment in municipalities in the Highlands Region to equivalents that are outside of the Region but still within the same counties assume that rates of change in the two areas should be similar if the Act and RMP had little or no effect, and would diverge if the Act and RMP affected growth in the Highlands Region. However, this assumes that broader (statewide and multi-state) demographic and employment trends affect the areas equally, which is unlikely to be the case. The analysis is not designed to capture what might be differential effects of these trends across areas.

2. The Great Recession

The impact of the 2007-2009 recession is difficult to gauge. There was only a two- to three-year period of implementation following passage of the Highlands Act before the recession began, and the RMP was issued just as the recession started. Following recession losses, employment recovery to prior

levels would not necessarily require new or significant land development within the evaluation period, and explicit limitations on new development might therefore not have detectable impacts on employment growth. Thus, while the finding that the Act and RMP have not had an effect on employment change during the recession and recovery may be accurate, but it is also likely that this is a premature assessment.

3. Implementation of the RMP

The extent of RMP implementation and adoption of conforming planning areas after 2008 would have a significant effect on any detectable trends. Approximately 78% of Planning-Area employment is located in non-conforming areas, and these areas account for nearly 70% of total employment in the Highlands Region. As such, comparisons of Highlands Region employment to that of municipalities outside the Region would largely reflect employment in areas that do not currently comply with the restrictions that accompany plan conformance, and it is these areas that would be expected to account for any divergent outcomes in the Highlands Region. As a result, with the slow pace of RMP conformance, any effect of the Act and RMP in Preservation and conforming Planning Areas may be subsumed in comparisons that include the entire Highlands Region. This effect would be particularly pronounced over a period obscured by the recession and during which the Planning Area has not yet neared its employment carrying capacity (see below). The FIA does examine some comparisons among Preservation and conforming and non-conforming Planning Areas within the Highlands Region; still, these comparisons are also complicated by the issues of short evaluation periods, slow pace of RMP conformance, and capacity constraints that remain distant due at least in part to the recession.

Research Approach

1. Employment as an Indicator of Economic Activity

We agree with PlaceWorks that employment is a good proxy variable for economic activity at the municipal level, particularly as other measures of output such as GDP or income are not usually available at the local level. Still, we have some concerns about use of employment for this purpose in the FIA. The effect that is being tested – i.e., economic trends that diverge from those seen in comparison areas – is based on changes in land-use regulations. It is not clear that such changes would necessarily translate into effects on employment in the short- and medium-term, even if some economic drag effect were detectable in other aspects of the economy (e.g., property prices or values). The difficulty of detecting an effect of the Act and RMP on employment is further complicated by several other factors, including the influence of the Great Recession and the set of broad demographic trends described above.

2. Carrying Capacity

The *Highlands Regional Build Out* technical report produced by the Highlands Council as part of the RMP process provides estimates of the employment “carrying capacity” of the Preservation and Planning Areas. These figures represent the estimated additional employment that could be accommodated by non-residential development in the Highlands Region both with and without the Act and conformance with the RMP. We believe that these a priori practical (though estimated) limits on employment growth should have been acknowledged in the analysis in order to more accurately frame the question of whether the Act and RMP were affecting employment growth *given the expected limitations they impose.*

The *Build-Out Report* estimates a limit of less than 100 new jobs in the Preservation Area given full conformance with the utility and water availability constraints of the Highlands Act, versus up to 30,100 jobs in the Preservation Area in the absence of the Act. It also estimates a capacity of between 30,000 (100% RMP conformance) and 128,000 (Preservation Area conformance only) new jobs in the Planning Area depending on the degree of conformance with the RMP. Thus, there would be an expectation of near-zero employment growth in the Preservation Area following passage of the Act, even in the absence of other factors. Analysis of employment performance in the Preservation Area alone should account for this limiting factor. Similarly, changing levels of Planning Area conformance would result in different expected limits on employment growth, although even the full-conformance limit of 30,000 would represent significant growth of approximately 10% in the Planning Area and, thus, would not pose the same limiting factor in the analysis as the limit in the Preservation Area. These limits, clearly identified in prior analyses of the Highlands regulations, should be acknowledged and, to the extent possible, incorporated into the hypotheses and analytical approaches in assessing comparative employment growth between the Highlands Region and the comparison areas, as well as within the Highlands Region itself.

3. Hypotheses should be clearly stated and justified

Comparisons across regions should be based on a clear understanding of the questions being asked – i.e., the hypotheses being tested by means of these comparisons. As stated in the introductory chapter, the hypothesis of the Regional Economic Evaluation is that “if the Act and the RMP have had an impact on the economy of the Highlands Region, then the measure of overall economic activity, employment, will show higher or lower rates of growth over time compared to other regions that were not subject to the Act and the RMP.” Simply seeking differences in trends over aggregate time periods may obscure more nuanced, differentiated effects that should be expected to occur over different time scales; hence, more specific hypotheses should be posed in many instances. That is, the effects on employment may vary depending on the scale and schedule of implementation. The reliance on longer-term averages in addition may obscure effects that occur at shorter scales.

- For example, table 4 on page 25 indicates that manufacturing employment in the Highlands Region declined at a significantly faster rate than in the comparison regions from 2008 to 2013.

The report notes that this was a faster rate than that of the comparison regions, but then notes that the overall rates from 2004-2013 were similar. It may be the case that the result in the first period was affected by passage of the Act.

- Similarly, in the comparison of employment change in low-population/low-employment density cities (p. 50), there was a large differential between the growth rates of Highlands Region (-0.2%) and non-Highlands Region municipalities (6.7%) in the 2004-2008 period. While the Conclusions to the chapter note mixed results in the municipal group comparisons, differences such as this merit closer examination and may well indicate influences from the Act's implementation.

4. Time Frame

The introduction (Chapter 1.1) indicates that the purpose of the Regional Economic Evaluation is to analyze the past performance of the Highlands Region to determine the effect of the Act and RMP. This approach is not fully realized in the analysis. If fully implemented, a panel data approach examining the trends in the HR and comparison regions *prior to* and following implementation of the Act and RMP would constitute a supportable, commonly used approach to such analyses. The majority of the analysis of employment change in the FIA uses data from the U.S. Bureau of Labor Statistics' Quarterly Census of Employment and Wages (QCEW) and covers the period from passage of the Highlands Act in 2004 to adoption of the RMP in 2008 to 2013, the most recent year for which annual employment data was available at the time the FIA was written. However, this portion of the analysis does not examine trends prior to the 2004 passage of the Act. The purpose of such an approach is to detect a treatment effect – that is, to determine whether concurrent, though not necessarily similar trends diverge from their relative trajectories following introduction of a change – here, passage of the Act and implementation of the RMP. Because the comparison begins only upon passage of the Act, the analysis observes only the relative employment trajectories *following* introduction of the first treatment (the Act), and it remains unclear whether these trajectories differ relative to those prior to passage of the Act. While there is some room for comparison of trajectories between 2008 and 2013 relative to the 2004-2008 period, these are not explored in depth in the QCEW section, and the trends during that period are complicated by the recession and other factors described above.

A separate section of the analysis uses employment data from the Census Bureau's LEHD program that extends back to 2002. While this section of the analysis does provide some comparison to pre-Act trends, two years (2002-2004) is likely an insufficient baseline for comparison.

Methodology

1. Comparison Regions

In addition to comparisons of areas within the Highlands Region (Preservation vs. Planning), the comparison areas selected for the study generally compare the Highlands Region to Highlands County

Municipalities not in the Highlands Region and to Northern New Jersey as a whole, with some municipal comparisons based on density measures. We believe there is insufficient theoretical rationale for these comparison groups and the comparability of the areas being examined is fundamental to the veracity of the analysis.

- a. The political economic relevance of the comparison groups is not pre-identified on what could be considered critical characteristics, except perhaps when the areas are broken into eight categories using both employment and population density, some of which are “empty boxes.” This is problematic since we do not know the baseline prior to the treatment in the main part of the analysis (see “Time Frame” section above). That is, if the baselines of the comparison groups differ substantially a priori, then we should undoubtedly expect different outcomes ex post. Unfortunately, we never learn about the baseline to make any determination of the situation a priori.
- b. Outside of being within the same basic political sphere – the State of New Jersey – the region Northern New Jersey (NNJ) has few socio-economic characteristics that make it a region against which contrasts should be made for the Highlands. While outlier high-employment-density and/or high-population-density municipalities in the comparison areas are excluded from the analysis, it is not clear that this renders the areas comparable across other meaningful parameters. It also produces some anomalous classifications – for example, while some highly urban areas (Jersey City, Passaic) are excluded from the comparison region, Newark is included.
- c. The inclusion of Bucks County in Pennsylvania and Rockland County and nearly all of Westchester County in New York is somewhat problematic. These counties include urbanized parts of the Philadelphia and New York metropolitan areas which may confound comparisons to the Highlands Region.

A more detailed, albeit resource-intensive selection protocol might involve the use of factor analysis or other methods to identify comparison areas that are similar across measures beyond employment- and population-density, including industry/employment structure, land use/land cover and other criteria. Examples of alternative classification systems include: District Factor Groups, a factor-analysis-based socioeconomic grouping used by the New Jersey Department of Education to allocate state aid to school districts on the basis of education levels, occupational status, population density, income, unemployment and poverty¹; and the municipal classification system used by the New Jersey State Police (Urban Center, Urban Suburban, Suburban, Rural, Rural Center) (Uniform Crime Report, 2014). As noted in point (a) above, the choice of comparison areas is also connected to the issue of time frame discussed in the Research Approach section. Ideally, depending on data availability, comparison areas would be selected based on similarity not only of relatively stable structural characteristics (density, industry), but also employment change patterns over an extended period preceding the passage of the Act in 2004. For example, the period from 1995 to 2004 could serve as an initial baseline, with comparison areas chosen on both structural and trend criteria, which could then be compared to trends in the subsequent periods following passage of the Act and RMP.

¹ See description at <http://www.state.nj.us/education/finance/rda/dfg.shtml>

2. Arbitrary cutoffs for density

The bases for cut-offs of categories for population and employment density that are used to evaluate the performance of municipalities are arbitrarily selected to be standard deviations from the mean values (1 and 2.5), and some municipalities are dropped from the evaluations if they fail to fall within the specified range. There is no discussion of why this approach might be better than quantiles with equal counts of municipalities in the categories or other approaches. The manner in which categories are set up can bias results. As it is, Highlands municipalities are underrepresented or absent in the various categories, which means that many of the statistical tests are invalid, as the report notes.

3. Unsupported Inferences

In the employment analysis of municipalities of comparable density, the analysis presented in the final section (p. 68) bases its conclusions on the number of municipalities included in group – e.g., in the 2008-2013 period, “twenty-four were in groups in which the average growth rates were lower than their peers, and 54 were in groups in which the Highlands Region municipalities had higher average growth rates than their peers in the two comparison regions.” However, the introduction to that section notes that each comparison within density groups is performed by *adding* together the total employment of the municipalities in each group. By counting the municipalities in each group, the language in the conclusion implies that the member municipalities of each group likely followed the trend attributed to their respective groups. While this conclusion may be borne out by the underlying data, it is not directly inferable from the analysis as performed. One or two municipalities may account for all of the employment growth in a category. Reporting the number of municipalities rather than their count of employment change or of their aggregate employment in 2004 may imply that a preponderance of employment is being discussed, when this is unknowable from what is presented.

4. Use of Regression Analysis

The use of regression analysis to compare two the means of populations (see pages D-2 to D23, Regional Economic Evaluation), while not incorrect, provides more information than is necessary and can lead to ill-advised interpretations of statistics presented (for example, of R^2). A Student t -test of means would be more appropriate.

In addition, the theoretical underpinnings or related hypotheses for the variables included in the multi-variate regressions (pages D-24 through D-31) are not fully described. That is, it is not made clear why we should expect higher or lower employment growth in municipalities with higher population and employment densities. What effect should the change in the share of the population with a high school diploma have on employment change? What effect should the various sectoral shares have and why? Median age? Theory suggests opposite signs from those obtained in some of the statistical tests. The education variable is also potentially endogenous to the model that is tested (i.e., the direction of causality is not clear). The density variables, either alone or in combination with each other and/or employment share variables, may instrument for the Highlands Region binary variable (i.e., they may be highly predictive of, and therefore collinear with the Highlands Region variable, resulting in biased

coefficient estimates and invalid tests of statistical significance). More sophisticated modeling techniques are needed to properly perform the statistical tests that are intended.

Data

The data sources used in the employment analysis, including micro-data from the U.S. Bureau of Labor Statistics' Quarterly Census of Employment and Wages and employment data from the Longitudinal Employer-Household Dynamics (LEHD) Program generally represent the best available, consistently measured metrics for these analyses. We note that the original scope of services also called for some analysis of commuting patterns that is not covered in the analysis. The U.S. Census Bureau's "On The Map" web application, based on LEHD data, provides significant capability in this regard. The application allows for analysis of commuter flows into and out of user-defined geographies over time, with some specification on earnings and industry parameters. It would allow for tracking of changes in Highlands Region commutation prior to and following passage of the Act and RMP.

Organization and Accessibility

There are a number of improvements that we feel could be made to the organization and presentation of the information in the FIA that would render it more easily readable and its results more accessible.

1. Additional Data and Tables

Organizationally, it would be helpful to have tables showing the absolute employment and employment shares referred to in the graphs and to which tables showing percentage changes refer. For example, Tables 4-9 and Figures 3-9 in the "Regional Economic Structure" section (pages 23-34) provide sectoral shares of total employment and rates of change, but do not give the precise shares or refer to the absolute employment these percentages represent. This information should be integrated into the body and tables of the section to allow for a clearer understanding of the implications of the shares and percentage changes. Additionally, comparisons of percentage change across the various density groupings should be informed by the amount of employment in the various groups. For many graphs, it would also be helpful to have the underlying data presented in tabular form.

2. Explanation/Verification of Calculations

Some material in the tables and text would benefit from further explanation. For example, there appear to be errors in several sections of Table 3 (page 22), but it is not clear whether these are rounding errors or miscalculations.² It is also not clear how some of the calculations were made. For example, it is not clear whether the reported annual average changes are arithmetic averages or compound annual growth rates (CAGR). The latter would be more appropriate (though unlikely to impact the results at this stage³). Since it is not clear which type of average is reported, the underlying information cannot be deduced from the rounded absolute total employment figures reported in Table 3.

² For example, employment in the Conforming Planning Area is shown as 72,000 in 2008 and 69,000 in 2013, but the change from 2008 to 2013 is shown as -2,000.

³ In ongoing monitoring, during extended periods of strong growth or decline, use of arithmetic averages rather than CAGRs can produce misleading results.

Chapter 3 – Socioeconomic and Real Estate Analysis of the Highlands Region

General Context

As in the Regional Economic Analysis, the Socioeconomic and Real Estate Analysis compares trends in the Highlands Region with those in the comparison areas to determine if there are statistically significant differences in their rates of growth or decline. This section's conclusions include:

- The Act and RMP have had no statistically significant effect on housing development in the Highlands Region.
- There were no statistically significant differences in the rates of change in the number of sales and sales values between the Highlands and comparison regions from 2000-2004, 2004-2008 and 2008-2013.
- Certain trends within the Highlands Region merit careful tracking: a faster decline in the sales price of single-family homes in the Preservation Area relative to the Planning Area from 2008 to 2013; and the declining average sales values of larger vacant lots in the Highlands Region compared to slow growth in the comparison regions.

We strongly agree with this final conclusion that continued monitoring is warranted. As in the Regional Economic Analysis, we have concerns that the confounding influence of general population trends, the recession, and the extent of implementation of the RMP may have limited the effectiveness of the analytical approach used to detect effects of the Act and RMP on property prices and development. In addition, while the section synthesizes and presents a vast amount of data, it lacks a cohesive narrative focusing on what differences would be expected, which *are* detected, and what the implications of those differences are.

Research Approach

1. Limited Building Permits Analysis

While the analysis of building permit data drew on Census data providing the number of single- and multi-family housing units authorized, it did not make use of annual municipal-level data available through the New Jersey Department of Community Affairs (DCA) providing permitted amounts of retail, office, and other nonresidential space (e.g., hotel/motel, education, institutional and storage) from 2000 through 2015 (New Jersey Department of Community Affairs, 2000-2015). DCA also provides estimates of the estimated cost of construction for residential and nonresidential permitted uses over the same period. Analysis of this additional DCA data would have allowed for additional comparisons across the Highlands and comparison regions, possibly providing further insight into the question of whether their growth and development patterns are diverging.

2. Carrying Capacity

Similar to the employment analysis, the analysis of housing unit construction does not draw on the information in the *Highlands Regional Build Out* technical report produced by the Highlands Council.

As with employment, the *Build Out* report provides estimated maximum build-out capacity for housing units in the region in the absence of the Act, with the Act, and with full RMP conformance. While the number of housing units permitted differs from that necessarily constructed, it is worth noting that the 18,453 units permitted in the Highlands Region from 2005 through 2014 exceed the estimated capacity of 12,300 for the 100% RMP conformance scenario provided in the *Build Out* report (the estimate was 28,800 with Preservation Area conformance only). This information would not necessarily affect the direct comparisons across regions made in the FIA; however, it could provide additional context in which to understand the growth levels in the Highlands Region versus the comparison regions.

3. Real Estate Analysis Hypotheses

Similar to the employment analysis, the analysis of property sales values would benefit from a more defined and nuanced set of hypotheses, rather than simply seeking a difference in trends. There is a significant body of literature that uses a variety of sophisticated approaches to assess changes in real estate prices that occur as a result of restrictive environmental and other land-use regulations. These studies use carefully selected comparison groups, and generally take the form of a hedonic analysis. Such analyses estimate housing prices as a function of a number of property-, municipality- and county-specific factors, including the presence of land-use regulations, are based on clearly defined hypotheses of expected price effects of the regulation, and often seek to understand the net impact of three separate effects:

- a. *Restriction effect.* “When a regulation restricts the use of a particular piece of land so that its “highest and best use” is prevented, it can be expected to decrease the property’s value” (Jaeger, 2007).
- b. *Scarcity effect.* “consider a situation where a land-use regulation limits the kind of use allowed on specified lands. As a result of this, the supply of land available for the “allowed use” is likely to remain higher than it otherwise would have been without the regulation, and the supply of land available for the “disallowed use” is likely to be lower than it otherwise would have been without the regulation. With these supply shifts, land prices for one land use may rise following the enactment of the regulation, and land prices for alternative land uses may decline following the regulation’s introduction.” “Given the possibility of a price effect for both regulated and unregulated land due to the land-use regulation, it would be presumptuous to attribute the entire price differential between the two markets to a reduction in property values for the regulated lands” (Jaeger, 2006).
- c. *Amenity effect.* “For example, regulations often are designed to support or enhance the livability of a neighborhood by excluding incompatible land uses. Regulations that protect open space and other natural amenities can have similar positive effects” (Jaeger, 2007).

Thus, the approach compares prices at the property level based on a large number of factors, attempting to tease out the specific impact of the land-use restriction from other, concurrent price influences. While challenging from a data and implementation perspective, such studies provide more justifiable results than a simple comparison of changes in price across large swaths of land. Following is a brief bibliography of studies that explore these methodologies. In particular, a study by Quigley and Rosenthal describes in depth the data-related and methodological challenges of measuring these effects accurately. Also of note is the 1991 Beaton statistical analysis that specifically considered how the Pinelands regional land use controls impacted property values.⁴

1. “The Impact of Regional Land-Use Controls on Property Values: The Case of the New Jersey Pinelands,” Beaton, Patrick W., *Land Economics* Vo. 6, No. 2, May 1991.
2. “Urban Growth Boundary and Housing Prices: The Case of Knox County, Tennessee,” Cho, Seong Hoon et al., *The Review of Regional Studies*, Vol. 38, No. 1, 2008.
3. “The Effects of Land-Use Regulations on Property Values,” Jaeger, William, *Environmental Law* 36:105-130, 2006.
4. “Have Land-Use Regulations Affected Property Values in Oregon,” Jaeger, William, Oregon State University, June 2007.
5. “Economic and Fiscal Impacts of Smart Growth Policies,” Marlow, Josef E., Sonoran Institute, July 2008.
6. “The Effects of Land Use Regulation on the Price of Housing. What do we know? What can we learn?” Quigley, John M. and Larry A. Rosenthal, *Cityscape: A Journal of Policy Development and Research*, Vol. 8, No. 1, U.S. Department of Housing and Urban Development, 2005.

4. Further Explanation Needed for Socioeconomic Analysis

Chapter 8 examines a number of socioeconomic characteristics of the Highlands and comparison regions. While there is substantial description of the data, there is little introductory and no concluding material to this chapter. As such, it is difficult to ascertain what the expected differences would be between the Highland Region and comparison regions, or how the provisions of the Act and RMP would be expected to affect indicators such as household size. At the same time, the analysis finds that the Highlands Region has differed from the comparison regions in its rate of change in household size, household type, median age, and ethnic makeup. As the analysis seeks to determine whether the Act and RMP have affected socioeconomic indicators in the region, it would be helpful to have a more fulsome discussion of these differences and their implications.

⁴ New Jersey has regional land-use controls in three areas: Pinelands, Meadowlands and Highlands.

Methodology

Unsupported Inferences/Inaccurate Representations

1. The conclusion of Chapter 7 states that “data show no statistically relevant impact of the Act and the RMP on housing development.” While the chapter contains numerous comparisons of growth rates in the Highlands and comparison regions, it does not employ any statistical tests to assess the significance of differences in these rates.
2. On page 34, the text states that the HR had higher rates of household growth than the New Jersey and New York comparison regions in all time periods with the exception of 1990-2000. However, as shown in the referenced table (Table 4), the HR also had a lower rate of growth (actually a slightly faster rate of decline) than the New Jersey comparison regions in the 2010-2013 period.
3. Some of the data provided in the appendices does not seem to comport with that shown or reported in the body of the text. For example, Figure 33 and the accompanying discussion on page 67-68 indicate that the average sales value per acre of vacant land declined in the Highlands Region from 2000 to 2004, while the statistical results indicate a positive percentage change in the mean value. While this may be simply an artifact of the statistical test, the language describing the nature of the statistical comparison is not clear and should explain why this difference appears.
4. On page 56, the description of Figure 22 indicates that the “trend in average sales value per acre from 2000 to 2013 is increasing in each of the subareas except the conforming Planning Area” for improved commercial properties. While this may be the case, this is not clear from the graph.

Data

As noted in the Research Approach section of this chapter, while the data and data sources used in this section are the best available for the analysis performed, additional data on the square footage and value of nonresidential permitted space is available from NJ DCA and could provide further insight and rigor to the analysis. (DCA reports annual 2000-2015 municipal-level office and retail space development, as well as 13 categories of “other” nonresidential development.) The analysis uses the term multi-family to refer to all housing with two or more units. NJ DCA data usually group both one- and two-family units into a single category, however it appears that only U.S. Census data (which separates one- and two-unit structures) was used in the analysis. If DCA data is used, care should be taken that it is accurately represented in order to avoid over- and/or undercounting of single and multi-family housing permits.

Organization and Accessibility

There are a number of improvements that we feel could be made to the organization and presentation of the information in the FIA that would render it more easily readable and its results more accessible.

1. Introductory Material for Socioeconomic Evaluation

Apart from Section 1.2 of Chapter 1, which was reproduced as the introductory chapter to the socioeconomic and real estate analysis presented in chapters 7-9, there is no additional background material presented in the introduction to this second part of the FIA. The introduction does explain the source of the building permit and assessment data, but does not provide justification for use of these indicators and simply repeats the methodology and time frame discussion from the first section of the FIA.

2. Missing Analysis

The data section in the report's introduction discusses the use of NJ DCA data for analysis of residential building permits within the Preservation and Planning Areas since 2010. This analysis does not appear to have been included in the report.

3. Graphs Difficult to Interpret

In all three chapters of this section, it would helpful to have tables accompanying the graphs – in a number of cases it is difficult to see that the reported numbers are borne out by the statistical analyses presented in the appendices or the interpretations in the text. For example, page 42 of the of Chapter 8 (“Socioeconomic Characteristics”) states that there is no significant difference between the rates of change in median household income between the Highlands Region and the comparison regions over the period from 2000 to 2013; however, it is not clear from the graph presented in Figure 14 on the following page that this is the case.

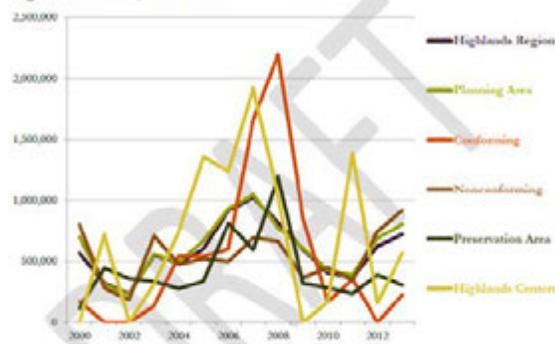
In addition, graphs such as Figures 22 and 25 (shown below and on pages 56 and 59 of Part 2 of the FIA) can be very difficult to read and interpret. It would be helpful to have tables showing the related figures, and possibly to present the data in a different graphic form.

Figure 22: Average Sales Value per Acre for Improved Industrial Properties, Highlands Region and Subareas, 2000 to 2013



Source: PlotWoods, 2015, using data from the NJ Department of Treasury.

Figure 25: Average Sales Value per Acre for Improved Industrial Property, Highlands Region and Subareas, 2000 to 2013



Source: PlotWoods, 2015, using data from the NJ Department of Treasury.

Also, mislabeling of some graphs and incorrect references in the text can be confusing for interpretation. For example:

- Figure 22 should read “Commercial” rather than “Industrial”.
- The reference to Figure 29 on page 63 refers to “the trend in average sales value per acre,” but should refer to “number of sales.”

4. Chapter 8 Conclusion

There is no concluding section or takeaway from Chapter 8 – the analysis of socioeconomic characteristics. The other chapters in the section both have conclusions and one would be helpful here as well. There is little explanation as to what these metrics might indicate about the Highlands Region and the influence of the Act and RMP.

Chapter 4 – Fiscal and Financial Analysis of the Highlands Region

General Context

Similar to the first two sections of the FIA, this chapter analyzes changes in property value and property tax revenues over time as an indicator of any impact the Highlands Act and RMP may have had to date. The section’s conclusions include:

- The data suggest that, following adoption of the RMP in 2008, and possibly in the period following passage of the Act in 2004, the Highlands Act and RMP contributed, though only to a small degree, to slower (or more negative) rates of growth in equalized property value in the Highlands Region relative to the comparison regions.
- Assessed property values grew more slowly in the Highlands Region than in the comparison regions from 2004 to 2008 and from 2008 to 2015, but the difference was not statistically significant. In contrast, assessed values in the Highlands Region grew at a statistically significant faster rate than that of the comparison regions in the period from 2000 to 2004, prior to passage of the Highlands Act. The authors suggest that the contrast in patterns of growth in equalized and assessed values indicate that differences in the growth rate of equalized value would “have been driven by differences in sales prices and/or the assessed value of the properties that were sold.”
- The analysis found no statistically significant difference in growth rates of property tax revenues between the Highlands Region and comparison regions.

Research Approach

1. Demand/Cost Side of the Fiscal Equation

The fiscal analysis does not directly consider the demand-side fiscal impacts that the Act and RMP may have. That is, while it seeks differences in the rate of change in property value over time in the Highlands and comparison regions as a proxy for fiscal health (i.e., the ability of the tax base to generate local tax revenues), it does not consider the demand side of the equation – i.e., municipal, county and school costs financed by property taxes that may also be affected by the Act and RMP. The analysis does not control for changes in costs or obligations that may have different effects across different regions and municipalities (e.g., affordable housing requirements or changes in the school aid formula). Are development limitations affecting growth in the number of students, police or fire department requirements, or other cost drivers that determine the tax levy? These questions are not addressed directly by the analysis. Data from the U.S. Census of Government Finances, albeit periodic, could have helped to address this subject matter.

The analysis does try to indirectly capture the demand side. Finding no statistically significant difference between changes in the rate of assessed value in the Highlands and comparison regions, the analysis posits that any difference in the rates of change in inflation-adjusted property tax revenues would be attributable to increases in municipal budgets, rather than to restrictions to the growth of

the base associated with the Act and RMP. However, as described in the next section, the use of assessed values (and lack of difference in growth rates thereof) is problematic as a basis for establishing changes in revenue bases over time.

2. Use of Assessed Value in the Analysis

Use of assessed values as a measure for comparison of changes is problematic, as it does not reflect the impact of periodic municipality-wide revaluations and annual reassessments on assessed value changes in the region. Occasional revaluations and regular reassessments can result in significant increases (or, in theory, decreases) to the value of the property tax base without reflecting an increase in the physical base of real property or associated changes in municipal costs. The proposition that differing rates of change in property tax revenues are not attributable to development restrictions of the Act and RMP assumes that the absence of a statistically significant difference in the rate of change in assessed values across comparison regions accurately reflects relatively similar rates of development. However, revaluations and reassessments are implemented on different, not necessarily regular schedules by different municipalities. Since communities in New Jersey assess property value for tax purposes at different ratios of assessed value to market value (the equalization ratio discussed earlier in the FIA), and these ratios typically change over time, comparing changes in assessed value across groups of communities over time might be comparing “apples to oranges.” To ascertain that similar rates of change in assessed property value do in fact reflect similar rates of development would require that the analysis controls for these revaluations and reassessments. Whether a municipality has undergone a revaluation or reassessment in a given year is indicated in the annual property tax spreadsheets published by the New Jersey Department of Community Affairs beginning in 2002 (New Jersey Department of Community Affairs, Division of Local Government Services, 1998-2015).

3. Unclear Hypotheses

While the analysis finds evidence that the Act and/or RMP may have contributed to slower growth in the sale prices (or assessed values of sold properties) in the Highlands Region relative to the comparison regions, it does not provide an explanation of this result or by what mechanism the provisions of the Act/RMP would be expected to have such an effect.

4. Time Frame

The use of 2000-2010 and 2010-2014 as analysis periods for municipal tax revenues deviates from that used in the other parts of the analysis. While the authors note that data on household counts was only available for selected years, as noted in the Data section of this chapter, the New Jersey Department of Community Affairs does report average residential property taxes by municipality in public documentation going back to 1998 (New Jersey Department of Community Affairs, Division of Local Government Services, 1998-2015). Use of these data as at least a supplement to that used for the 2000-2010-2014 analysis would have enabled an analysis symmetrical in time frame to that of the equalized and assessed value analysis, capturing the periods following implementation of the Act and RMP. Alternatively, periods from 1995 (if available) to 2004, 2005 to 2009 and 2010 to the most recent data could have better captured the most recent trends in tax and spending patterns.

Methodology

1. Use of Tax Revenue Data

We assume that the analysis of tax revenues refers to all three main property tax components – municipal, county, and school district– as well as other components specific to some municipalities. For example, some municipalities and counties have open-space taxes, which most urban areas do not have. The three main components are alluded to in the introduction to Chapter 10, but the text does not explicitly tell the reader whether they are all considered in the analysis, and it is not possible to deduce this from the figures provided in the text. School enrollment is the primary driver of property taxes in most New Jersey municipalities, and may well be affected by the development restrictions associated with the Act and RMP. Thus, it is important that all taxes be incorporated into the analysis and that this be explicitly announced in the text. It may also make sense to examine the three property tax components separately, as each has separate drivers, each of which may be affected differently by the provisions of the Act and RMP.

2. Inconsistent Table Data – Weighted Averages and Weighted Least Squares Regression

The values reported in Table 1 and Table 2 do not agree. For example, the rate of change in equalized property value from 2000 to 2005 is reported as 11.8% for the Highlands Region in Table 1, but as 12.1% in Table 2 (see excerpted tables below).

	2000 to 2005	2005 to 2008	2008 to 2013	2013 to 2015
Highland Region	11.8%	5.6%	-3.4%	0.5%
Highlands County Municipalities not in the Highlands Region	11.6%	6.3%	-2.7%	1.1%
Northern New Jersey (ex. Highlands Region)	12.0%	7.1%	-3.0%	1.6%

Source: PlaceWorks, 2016, using data from the N.J. Department of Treasury

	Highlands Region	Highlands County Municipalities Not in the Highlands Region	Northern New Jersey
2000 to 2005: High rates of growth			
Average annual municipal percent change	12.1%	11.5%	11.9%
Statistically significant	Yes	Yes	No
R ² (amount of difference correlated with being in the Highlands Region)		2.4%	n/a
2005 to 2008: Declining rates of growth			
Average annual municipal percent change	5.8%	6.4%	6.8%
Statistically significant	No	No	Yes
R ² (amount of difference correlated with being in the Highlands Region)		n/a	3.5%
2008 to 2013: Negative rates of growth			
Average annual municipal percent change	-3.8%	0.8%	-3.1%
Statistically significant	Yes	Yes	Yes
R ² (amount of difference correlated with being in the Highlands Region)		5.8%	3.8%
2013 to 2015: Recovery, low rates of growth			
Average annual municipal percent change	0.1%	0.8%	1.1%
Statistically significant	Yes	Yes	Yes
R ² (amount of difference correlated with being in the Highlands Region)		2.6%	3.9%

Source: PlaceWorks, 2016, using data from the N.J. Department of Treasury

This is because the rates reported in Table 1 represent the change in the total equalized property value in each region, while those in Table 2 represent the arithmetic average of the rates of change across all municipalities in each region. This effectively means that the values in Table 1 represent the weighted average rate of change for each region (i.e., the average rate of change when each

municipality's share of the region's total value is taken into account), while the averages reported in Table 2 are simply the calculated arithmetic average of the rates of change for the municipalities in each region. The latter set – that in Table 2 – does not reflect the amount of the total value (captured in Table 1) that each municipality represents. Because different municipalities account for different shares of the total property value in each region and value may be largely concentrated in a small number of municipalities, the weighted average change (i.e., the aggregate change shown in Table 1) is a more appropriate and accurate reflection of each region's average change. For the same reason, it would also have been appropriate to use a weighted least squares (WLS) regression in analyzing the difference between growth rates in the different regions. This method is similar to that used in the study, but would give extra weight to those observations (municipalities) that represent a larger share of value in each region. It is unlikely that this would have produced different results in the analysis of equalized value, as the weighted and unweighted averages do not differ much. There is a similar issue with the contrast between Tables 8 and 9. While the regression analysis results from Table 9 do reflect a comparison of average rates of change in per-household tax revenues for the Highlands and comparison regions, the average rates reported are unweighted, and are thus highly sensitive to what could be significantly high rates of change in relatively small municipalities not necessarily representative of the broader region.

3. Description of R^2 Statistics Unclear

Through many of the tables presenting regression results, the report presents R^2 values to indicate the contribution of being located in the Highlands Region to the difference between municipal growth rates in the Highlands and comparison regions. However, it is not clear whether the reported R^2 statistics – which measure the ability of the chosen set of independent (predictor) variables to explain variation in a dependent (predicted) variable – are for the full set of variables that are described as regressors at the outset of the section or for an equation that includes only those variables that were deemed statistically significant (the tables exclude the R^2 if no variables were statistically significant).

4. Robustness/Stability of Coefficients

At the bottom of page 36, the report notes that addition of the value of new construction to one of the regression equations renders the Highlands Region variable statistically insignificant. The fact that inclusion of an additional independent variable renders another variable insignificant is evidence of that the estimated coefficient is not robust (i.e., not stable due to violations of the underlying assumptions required for validity of an ordinary least squares regression model) and likely indicates collinearity or other issues with the data. We have some concern that this issue may pervade other regression analyses in this section.

5. Endogeneity of Construction Value Variable

The use of the value of new construction as a control variable in the regressions examining differences in rates of change in property value is problematic. The intent of the approach is sensible – i.e., to gauge the relative changes in property values across municipalities in different regions *net of the influence of additional new construction*. Unfortunately, the same factors that influence new construction value are

likely to be the same as those motivating changes in total value in place (net of new construction value). In fact, it may be that appreciating values driven by the perception of locations being “attractive places to live or own land” are in fact a key driver of increasing new construction. This simultaneous influence of the independent variable (rates of change in new construction) and the dependent variable (rates of change in assessed/equalized value) on one another – referred to as “endogeneity” in econometric analysis – can affect the statistical results, generating biased coefficients and, hence, erroneously indicating statistical significance. That is, the regression model does not just discount the value of new construction from total property value. Instead, via its coefficient, it also captures the effects of any other factors that may be associated (statistically) with the value of new construction. Thus it is not surprising that the Highlands Region dummy variable is statistically insignificant, as the new construction value is undoubtedly correlated with the Highlands Region variable, perhaps even negatively correlated (which implies less new construction value put in place within the Highlands Region).

6. GDP Price Deflator

It appears that Chapter 11 uses a general GDP Price Deflator to adjust for inflation (Figure 4). It would be more appropriate to use the Implicit Price Deflator for State and Local Government Expenditures for cost increases related to the activities of a state government agency. This is a commonly used adjustment factor for state agencies using cost increase formulas.

Data

- The authors note that data on the number of households was not available as a means to normalize property tax revenues on an annual basis. However, DCA does provide average property taxes per residential parcel on an annual basis, and, while imperfect, this measure might be equally useful.
- Data from the U.S. Census of Government Finances, albeit periodic, could provide some insight into changing demand-side fiscal impacts associated with the Act and RMP.

Organization and Accessibility

- The term “tax levy” might be more appropriate here than “tax revenues” based on the data used. The New Jersey Department of Community Affairs’ Division of Local Government Services reports the calculated tax levy – the budgeted property taxes due – for each municipality. “Tax revenues” refers more specifically to the *actual* amount collected, which often falls short of the calculated levy. The levy used in the report is the proper metric for the analysis.

- As noted above, the report should clarify whether all property tax revenues (municipal, county, school district and all other, such as open space and library) are used or only the municipal portion.
- The 2008-2013 rate for the Highlands County Municipalities not in the Highlands Region is reported as -2.7% in Table 1 and 0.8% in Table 2. It's not clear if this is a result of the use of the unweighted average or due to another cause.

Chapter 5 – Metrics

The Highlands Council requested that the Rutgers team recommend any additional metrics not included in the FIA that should be included in future studies as indicators of the economic position of the Highlands Region and its municipalities relative to comparison areas. In addition, the Council asked the Rutgers team to review the proposed metrics for the *Highlands Municipal Factbook* and make recommendations for additions or modifications. Some of the recommendations apply to both the *Factbook* and use for future analyses. Finally, the team was asked to assess the viability of forecasting economic performance in the region over a 10-year horizon.

Metrics for Future Studies

As noted on several occasions in this review, we believe that the choice of metrics for future analysis needs to be coupled with a more rigorous selection of comparison areas and analytical methods, as well as, where possible, collection of data from periods prior to passage of the Highlands Act.

With the exception of the sections of the Fiscal and Financial Analysis examining assessed value and municipal tax revenues, we consider the data chosen for analysis in the FIA to represent a good cross-section of metrics. The microdata on employment, if it can be obtained for earlier periods and on an ongoing basis, can be a useful tool for analysis over a longer term. As noted in the review, we believe that these data could be augmented via tracking of additional indicators, many of which overlap with those we recommend for the *Factbook* (see below). These include:

- *Building Permits.* We recommend that the data on building permits be subdivided into residential and non-residential categories (based on available detail), and that the dollar value of permitted construction be added. This will provide additional insight into the type of development activity being considered or undertaken in the municipalities.
- *Tax Rates and Levies.* Both absolute and equalized tax rates (the former showing the officially posted or nominal rate based on assessed value and the latter indicating the rate as a share of market value) as well as levies for each component (municipal, county, school) of the property tax can provide further insight into the drivers of municipal costs.
- *School Enrollment.* School enrollment is a key driver of property taxes and, along with age cohorts, an indicator of demographic shifts in the population.

Highlands Municipal Factbook Recommendations

- *Building Permits.* We recommend that the data on building permits be subdivided into residential and non-residential categories (based on available detail), and that the dollar value of permitted construction be added. This will provide additional insight into the type of development activity being considered or undertaken in the municipalities.
- *Population Change.* Population change is shown from 2000-2010. This should be brought up to the most current available year.

- *Tax Rates.* Both absolute and equalized tax rates should be provided for each component (municipal, county, school) of the property tax. This will provide further insight into the drivers of municipal costs and tax levies.
- *Equalized Value of Property.* It would be helpful to show this on a normalized basis (e.g., average per residential property) as well.
- *Per Capita Income.* While a single-year figure for per capita income is only available from decennial Census data, the U.S. Census Bureau’s American Community Survey does provide five-year averages, updated annually, at the municipal level. While imperfect (and often with large error margins), these estimates would provide a more current snapshot of income levels than the decennial figure.
- *Private Sector Establishments.* This indicator is not particularly indicative of economic status in the absence of information about establishment size. Private sector employment should be sufficient for this.

Long-Term Forecasting Feasibility

Long-term forecasting models can be created for relatively small – i.e., municipal or regional – geographies, depending on available data. However, the smaller the geography, the fewer indicators tend to be available. Also, data for smaller areal levels tend to be less robust over time. As noted above, for example, annual income data at the municipal level are available only in the form of five-year averages. Data on gross domestic product (i.e., economic output) are not available below the state level, but can be approximated for counties. These and other data limitations render municipal and regional forecasts more speculative than those for larger defined areas for which data are consistently recorded and reported. In addition to these obstacles, a long-term forecasting model for the Highlands Region would, to serve its presumably intended purpose of gauging the impacts of the Highlands Act and RMP, need to link historical economic growth to land-use, zoning and development patterns. These latter data items may be difficult to obtain on a regular basis or at least may require a significant (costly in terms of time and money) data collection effort. As such, a meaningful, readily updated, long-term forecasting model for the region is not feasible. Still, ongoing tracking and analysis of key indicators such as those included in the FIA and additional metrics described in this section can provide some indication of future economic trajectory for the region.

Chapter 6 - Conclusion

The three-part FIA produced by PlaceWorks represents a significant starting point for ongoing and future analysis of the impacts of the Highlands Act and Regional Master Plan on the economic and fiscal health of municipalities in the region. This peer review suggests areas in which the data, analytical approaches and methods used in the FIA could be improved in order to further validate the study's findings.

There is a multi-decade history of analytical work at the national, state and local level attempting to tease out the effects of zoning and other regulatory policies (e.g., urban growth boundaries) on real estate markets and economic growth. In New Jersey, this has included work examining the Pinelands Region, as well as analyses of the potential impacts of the New Jersey State Plan, which examined the likely differences in economic growth and development patterns under scenarios with and without the Plan. Some studies in this literature compare indicators within an affected region to those of comparison regions, and the approach used in the FIA follows this tradition. A useful addition to the FIA would have been a fulsome description of this literature, the reason for selecting this approach (and not others), and the reason for choosing the particular method for determining comparison areas. This introductory material would help to provide an important contextual framework justifying the approach and methods used in the analysis.

While our review has enumerated a number of concerns with analytical techniques and approaches used in the FIA, we are not in a position to state that the findings of the study are incorrect. In fact, we agree with the FIA's authors that continued monitoring of several indicators is worthwhile. Rather, our overall impression is that, given the various confounding factors described in the report – including broad demographic trends, the Great Recession and subsequent slow recovery, and the slow pace of implementation of the RMP – a different set of analytical approaches and more time are required to detect any effects that the Act and RMP may have had to date. Such approaches are likely to be both data and resource intensive. Nonetheless, focused studies conducted on an occasional basis would likely prove worthwhile in assessing the impact of the Act and RMP on an ongoing basis.

The topics for more focused analysis could be determined by the Highlands Council based on concerns of residents, local businesses, and other stakeholders. As time passes, more data are likely to become available, allowing for a more robust approach to detecting changes in land values, prices, and transactions, as well as other broader indicators such as employment, that may be associated with the provisions of the Act and RMP. Identifying these impacts effectively will require a clear concept of the effects that are expected, an understanding of the mechanisms by which the provisions of the Act and RMP result in these effects, a carefully selected comparison group, and application of appropriate methods.

References

- Beaton, P. (1991, May). The Impact of Regional Land-Use Controls on Property Values: The Case of the New Jersey Pinelands. *Land Economics*, 6(2).
- Cho, S. H., Chen, Z., & Yen, S. T. (2008). Urban Growth Boundary and Housing Prices: The Case of Knox County, Tennessee. *The Review of Regional Studies*, 38(1).
- Hughes, J. W., & Seneca, J. J. (2014). *The Receding Metropolitan Perimeter: A New Postsuburban Demographic Normal?* New Brunswick, New Jersey: Edward J. Bloustein School of Planning and Public Policy, Rutgers University.
- Jaeger, W. (2006). The Effects of Land-Use Regulations on Property Values. *Environmental Law*, 105-130.
- Jaeger, W. (2007). *How Have Land-Use Regulations Affected Property Values in Oregon*. Corvallis, Oregon: Oregon State University.
- Marlow, J. E. (2008, July). *Economic and Fiscal Impacts of Smart Growth Policies*. Sonoran Institute.
- New Jersey Department of Community Affairs. (2000-2015). *Building Permits: Yearly Summary Data*. Retrieved from New Jersey Department of Community Affairs: http://www.state.nj.us/dca/divisions/codes/reporter/building_permits.html
- New Jersey Department of Community Affairs, Division of Local Government Services. (2002-2015). *Property Tax Information*. Retrieved from Division of Local Government Services: http://www.state.nj.us/dca/divisions/dlgs/resources/property_tax.html
- New Jersey Department of Education. (2004, August 16). *District Factor Groups (DFG) for School Districts*. Retrieved from New Jersey Department of Education: <http://www.state.nj.us/education/finance/rda/dfg.shtml>
- Quigley, J. M., & Rosenthal, L. A. (2005). The Effects of Land use Regulation on the Price of housing: What do we know? What can we learn? *Cityscape: A journal of Policy Development and Research*, 1.
- Uniform Crime Reporting Unit, Division of State Police. (2014). *Uniform Crime Report*. Trenton: State of New Jersey, Division of State Police.