A REVIEW OF PROJECTION METHODOLOGIES FOR THE ARLINGTON COUNTY GOVERNMENT & ARLINGTON PUBLIC SCHOOLS

April 8, 2015

STATISTICAL FORECASTING LLC

RLS Demographics

ACG ESTIMATES METHODOLOGY

- ACG uses a residential and commercial capacity based methodology driven by the General Land Use Plan and permit tracking systems.
- Estimates are prepared for housing units, households (occupied housing units), population and employment
- Occupancy rates and average household size are based on decennial census results

ACG ESTIMATES METHODOLOGY

- Employment estimates are based on the General Land Use Plan with approved projects for new and converted commercial office, retail, hotel and other square footage
- Commercial vacancy rates from CoStar for sub-areas obtained quarterly but adjusted based on BRAC and redevelopment plans
- Estimates are based on census block level analysis

ACG FORECAST METHODOLOGY

- ACG forecasting process is analogous to the estimates process
- Net new construction between the base year (2010) and the forecast year comes from the development database at the block level
- Development potential is based on approved site plans and development in the General Land Use Plan

WHAT WORKS WELL?

- Residential and commercial capacity based development driven by General Land Use Plan
- Continuous update and monitoring of permit tracking databases
- Bottom-up approach using small area (census block) analysis
- Integration of GIS, development databases, and reporting mechanisms

RECOMMENDATIONS IMMEDIATE IMPLEMENTATION

1. Methods Documentation
2. Monitor American Community Survey (ACS) Housing Occupancy
3. Monitor ACS Average Household Size

RECOMMENDATIONS
ADDITIONAL STUDY AND RESOURCES

4. Age Distribution Analysis
5. Migration Analysis Using Census Microdata
6. Development of Cohort-Component Demographic Forecasts
7. Analysis of Self-Employment
8. Integrated Economic/Demographic Modeling

ENROLLMENT PROJECTION METHODOLOGY GRADE PROGRESSION RATIOS

- Preferred method by school demographers
- Assumes past trends will continue into future-linear trend
- Predictive ability varies from 1-7 years depending upon the research
- Good predictive ability for 3-4 years.

ENROLLMENT PROJECTION METHODOLOGY

- Historical enrollments by attendance area
- Bottom-up approach used to project enrollments
- In years 6-10 of projection, births are estimated by a 3-year rolling average.
- Elementary projections in years 6-10 are less reliable- children yet to be born. MS & HS are more reliable since students are born or are in school district.
- Student generation factors (student yields) are used to project children from new housing and are added to baseline projections.

INTERNAL REVIEW OF PROJECTIONS

- APS reviews projections annually for one year out.
- In last 11 years, total projected enrollment has been within +/- 2% of actual enrollment.
- 2/3 of demographers in field believe +/-1% per year is appropriate benchmark for accuracy.
- If 1% criterion is used, APS is within acceptable limits in about half of the last 11 years.

WHAT WORKS WELL?

- Grade Progression Ratio methodology is appropriate
- Error rates are acceptable for a fast-growing district such as APS
- Bottom-up approach by attendance area used to capture unique growth rates
- Use of housing pipeline data from ACG to forecast additional students

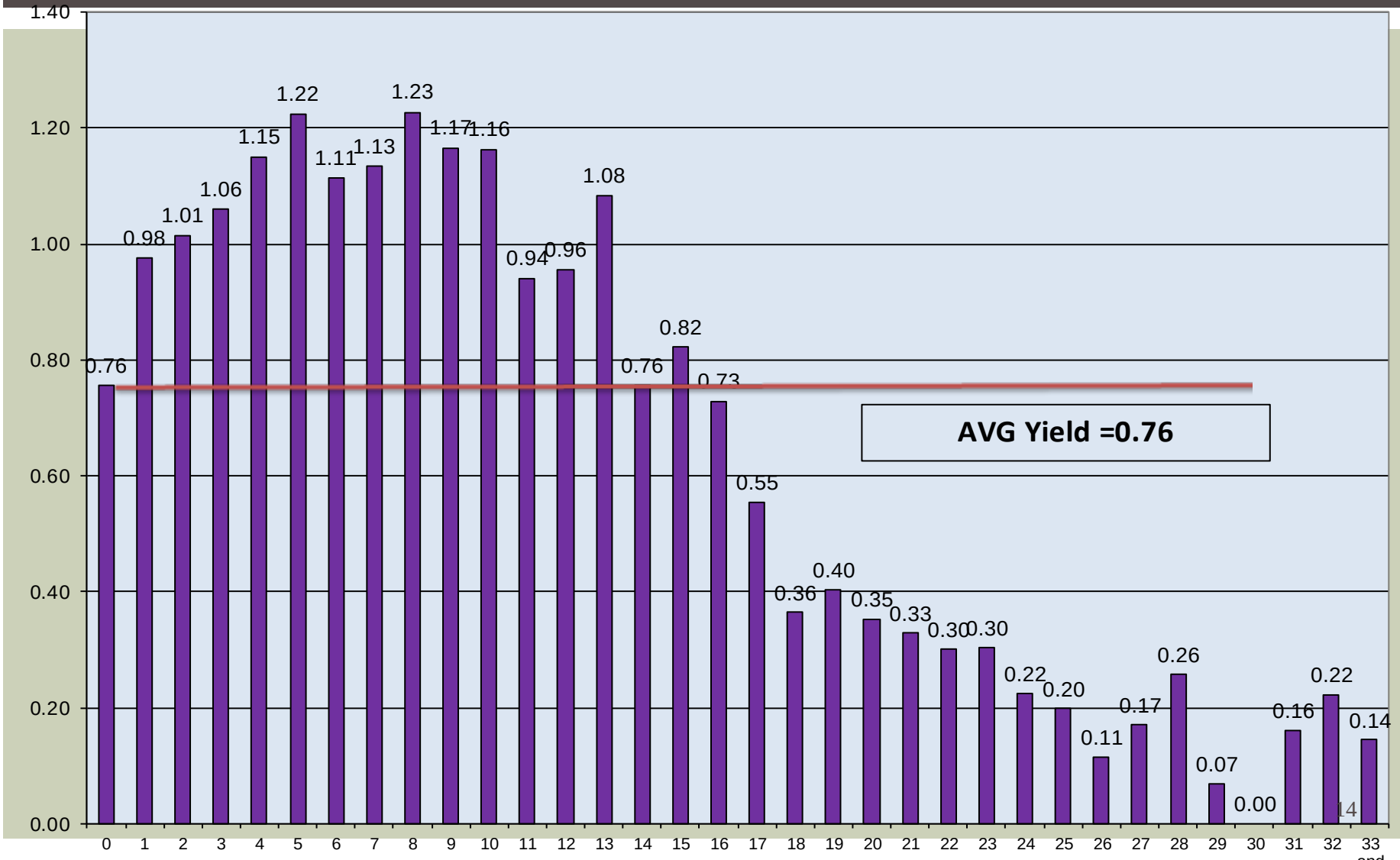
APS RECOMMENDATIONS IMMEDIATE IMPLEMENTATION

1. Publish annual report
2. Compute alternative set of projections
3. Perform longitudinal analysis of projections
4. Publish baseline and adjusted projections
5. Aggregate Student Generation Factors to Attendance Area
6. Consider Past Home Construction Before Adding Students from New Home Construction
7. Update APS website

APS RECOMMENDATIONS ADDITIONAL STUDY AND RESOURCES

8. Compute student generation factors by length of ownership (detached SF, TH, condos, etc.) Example figure from client in NJ to follow.
9. Project future births in collaboration with ACG estimates
10. Attend professional conferences in school demography

YIELDS BY LENGTH OF OWNERSHIP DETACHED SF HOMES (NJ)



ADDITIONAL AREA OF COLLABORATION

- ACG and APS currently utilize different data sources and methods
- Residential housing development is an important link between the methods
- Primary need is to integrate demographic analysis of the age distribution and fertility (number of births) with the resulting school enrollment methods