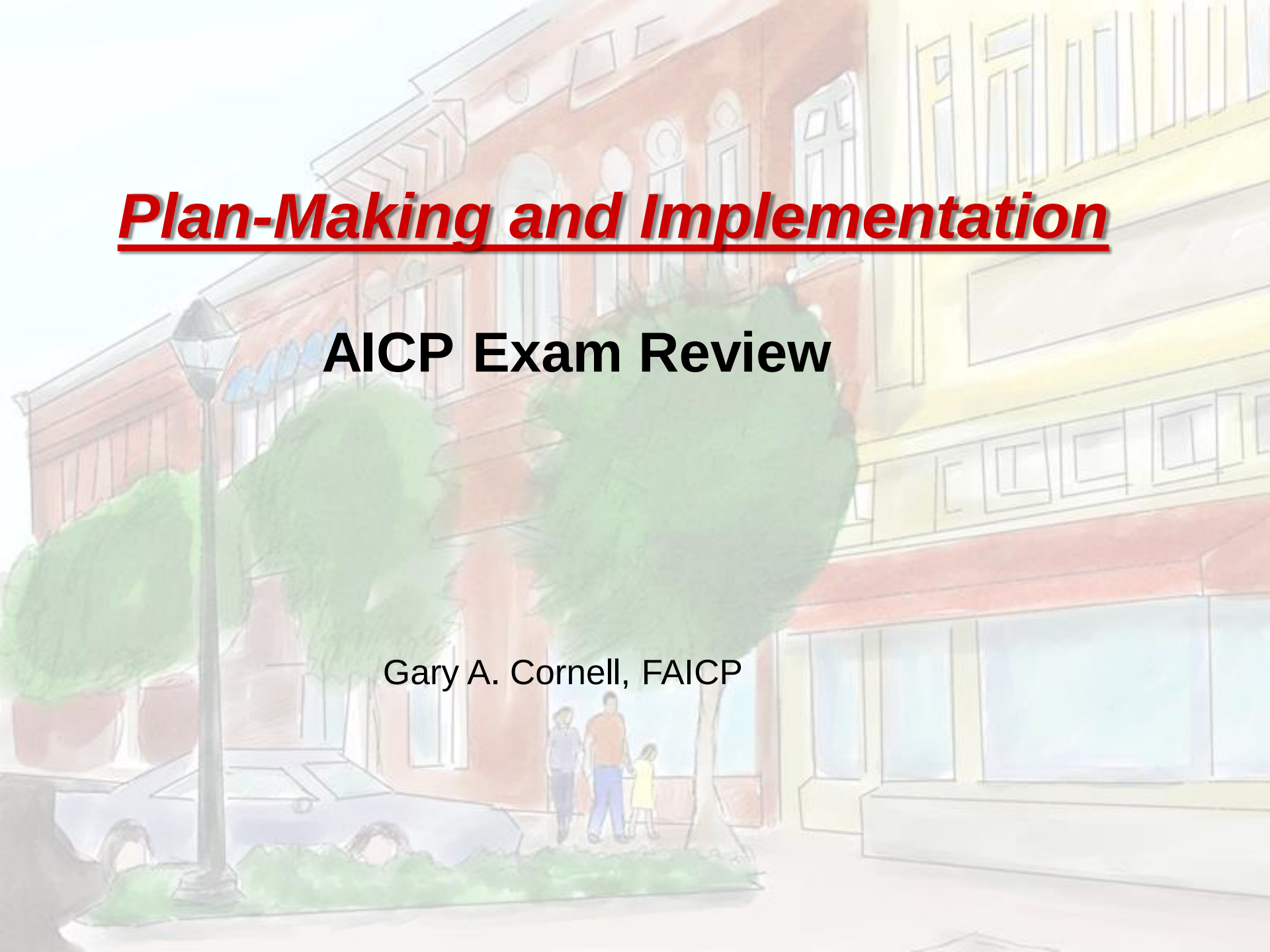


Plan-Making and Implementation

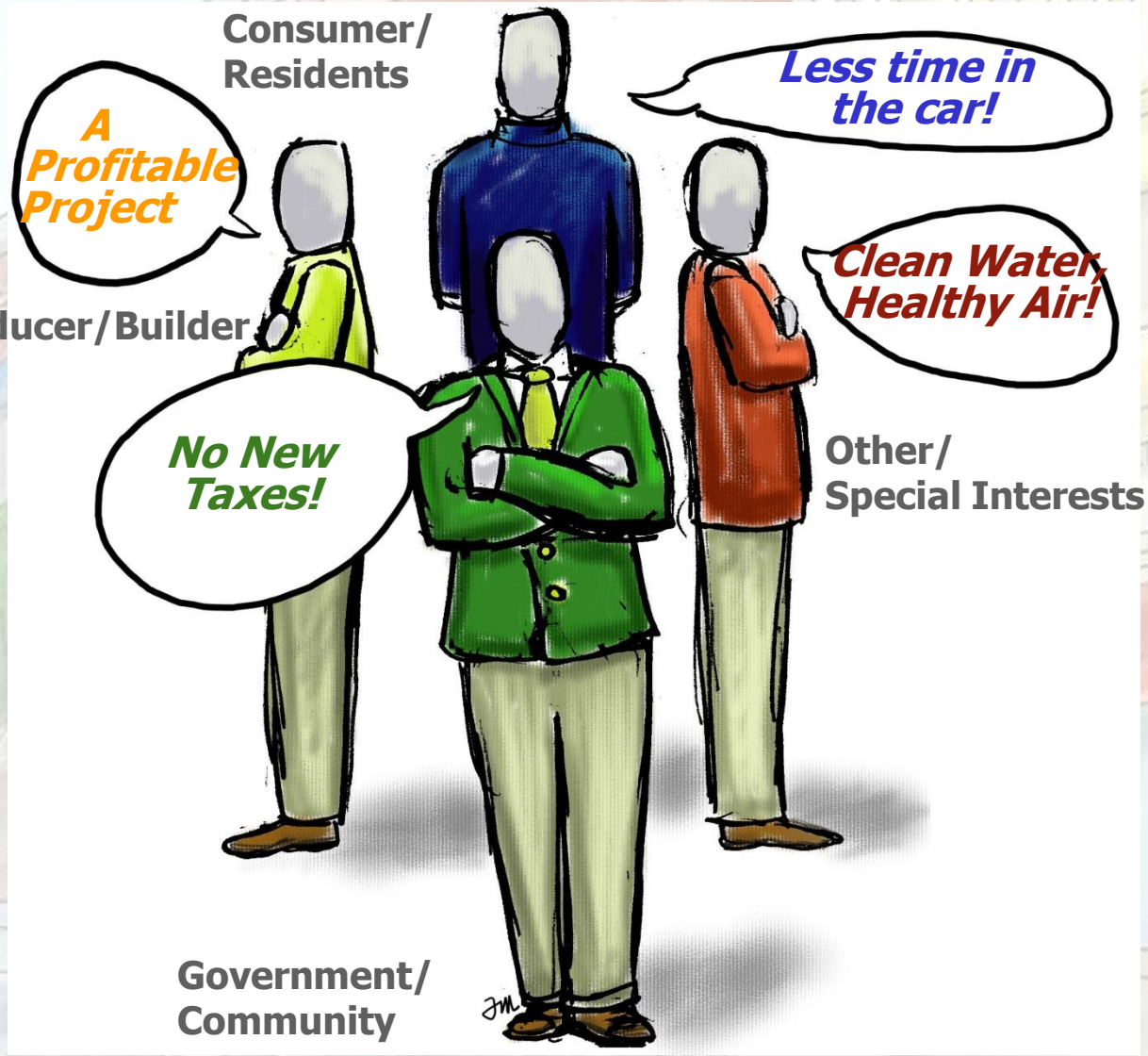
AICP Exam Review

Gary A. Cornell, FAICP

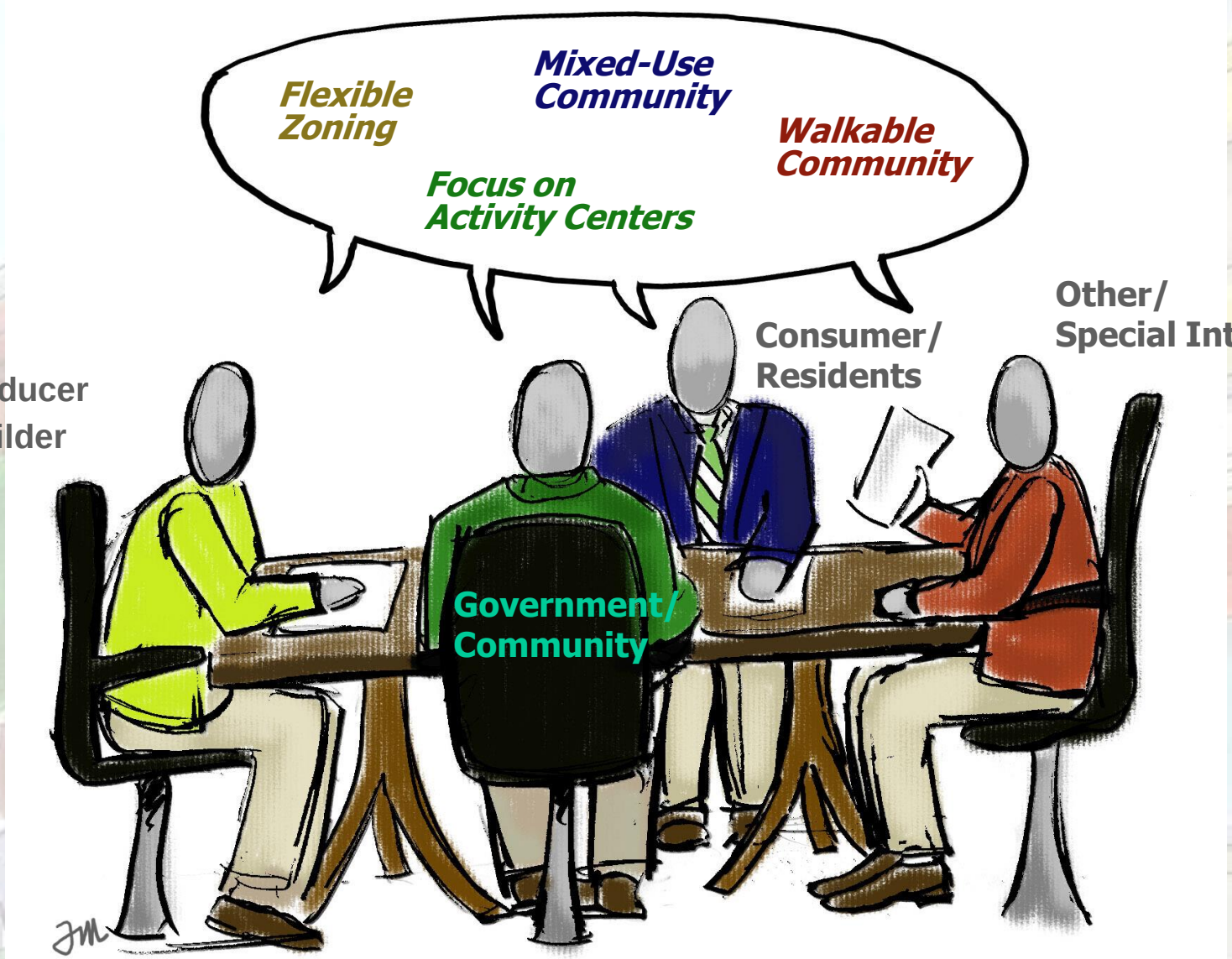
Outline of AICP Exam Content

- Visioning and goal setting
- Quantitative and qualitative research methods
- Collecting, analyzing, and reporting data and information
- Demographics and economics
- Natural and built environment
- Land use and development regulations
- Application of legal principles
- Environmental analysis
- Growth management techniques
- Budgets and financing options
- GIS/ spatial analysis and Information systems
- Policy analysis and decision making
- Development plan and project review
- Program evaluation
- Communication techniques
- Intergovernmental relationships
- Stakeholder relationships
- Project and program management

Traditional Approach to Community Goals



Collaboration



What is Visioning?

APA Says

Vision *is*

the overall ***image*** *in words that describes what the local government wants to* ***be*** *and how it wants to* ***look*** *at some point in the future, and that has been formulated with the involvement of* ***citizens****.*

From American Planning Association, *Growing Smart Legislative Guide Book, Model Statutes for Planning and the Management of Change*, 2002, p 7-25

A Vision

Describes shared desires
Reflects highest standards
Includes multiple perspectives
Emphasizes community uniqueness
Depends on commitment of many to achieve
Provides a springboard for action

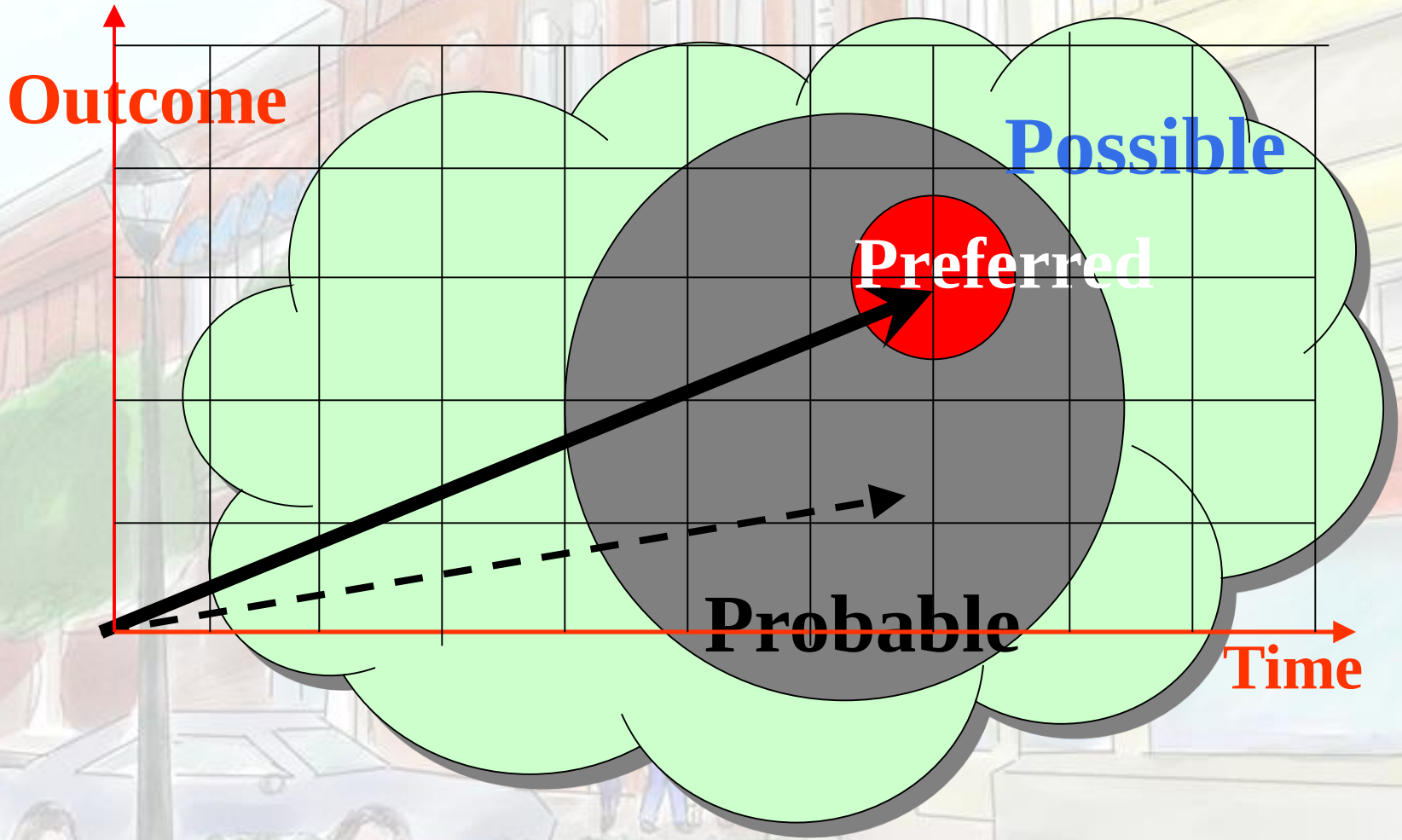
From The Civic Index, National Civic League,1999, pp. 33-34

Visioning should reflect…

Clear sense of past
Positive thinking
Big picture
Community values
Points of pride
Visual descriptions (layman's language)
Long time frame
Aspirations

Based in part on The Community Visioning & Strategic Planning Handbook, NCL, 2000, pp. 37-38

Possible, Probable and Preferred Futures



Glenn Heimstra

Visioning Tools

Website

Keypad Voting

Visioning Charrettes

Photo Contest

Strategic Planning Workshops

Social Networks

facebook

Google groups

Visioning Initiates the Planning Process

Visioning

Comprehensive Plan = Overall Framework

Inventory and Assessment of Existing Conditions

Goals, Objectives, and Policies

Land Use Plan

Implementation Strategies

Short-Term Work Program

Functional Plans

Transportation

Water Supply

Wastewater Treatment

Solid Waste Management

Stormwater Management

Parks And Recreation

Public Safety

Capital Improvements Program

Financial Capacity Analysis

Capital Budget

Implementing Ordinances

Zoning Ordinances

Development Regulations

Adequate Public Facilities

Building Codes

Fees

Administration

Plan Reviews

Permits

Building Codes

Public Involvement

Role of Comprehensive Plan

- Provides a framework for
  - Specific plans
  - Natural resource protection
  - Public improvement plans
  - Private investment decisions
- Manages spillover impacts
  - Public improvements
  - Natural resource mgmt.
  - Property Values
- Provides predictability
- Provides a basis for coordination/ cooperation

Implementing Your Plan

Types of Implementation Strategies:

Are you Rich, Strong or Beautiful?

Capital Expenditures

Regulation

?

Luck?

Implementing Your Plan

Growth management through Expenditures

- Capital Improvements:
  - Transportation
  - Water, Sewer
  - Public Safety, Libraries,
  - Schools
  - Parks, Hospitals
  - Stormwater Management
- Financial Capacity

Capital Improvements Program

- Rolling 5 year list of capital improvement projects
- Current year moves into the annual budget and new projects are added in the out year
- Annual program of projects and revenues:
  - Project list
  - Responsible department
  - Priority/ project ranking criteria
  - Cost of land, engineering, construction
  - Multi-year phasing, funds allocation
  - Sources of capital funds

Implementing Your Plan

Capital Finance Tools

Pay as you go vs. Capital debt

- General Obligation Bonds
- Revenue Bonds

Taxation

- Property Tax
- Sales Tax
- Tax Abatement
- Special Tax Districts

Fees

- Impact Fees
- Tolls/ User charges

Federal and State Grants

Special Tax Districts and Tax Increment Finance

Budgets and Financing Strategies

- Level of service (LOS) standards.
- Concurrency – enforces (LOS) standards
- Life – cycle costing (capital, operating, maintenance)
- Planning Programming Budgeting Systems (PPBS) – performance-based budgeting.
- Zero based budgeting (ZBB) – from the ground up each year.
- Generally accepted accounting principles (GAAP)
- Cutback management (across the board or triage)

Growth Management by Partnerships

Forms of local governments,

Council-Manager plan, Strong Mayor

General purpose vs. special purpose local governments (e.g., Authorities, Special Districts, Community Development Corporations)

Intergovernmental grants, including block and categorical.

Regional forms of governance, Councils of Government, Metropolitan Planning Organizations

Non-Government Organizations (Human Service and Economic Development Agencies, etc.)

Communication Techniques

Public Meetings/ Speakers' Bureau
Effective public presentations
- Powerpoint/ GIS
- Graphic presentation of data (3-D charts)
- 3-D Visualization, V.I.Codes
Newsletters, Public TV channels, Video
Email, websites, Face Book, blogsites
Public access to Public Information, Notices, Agendas, Minutes
Sunshine laws and public records.

Growth Management by Regulations

What are we talking about?

← What's going to happen here?

Zoning & Land Development Regulations

The DNA of your Community

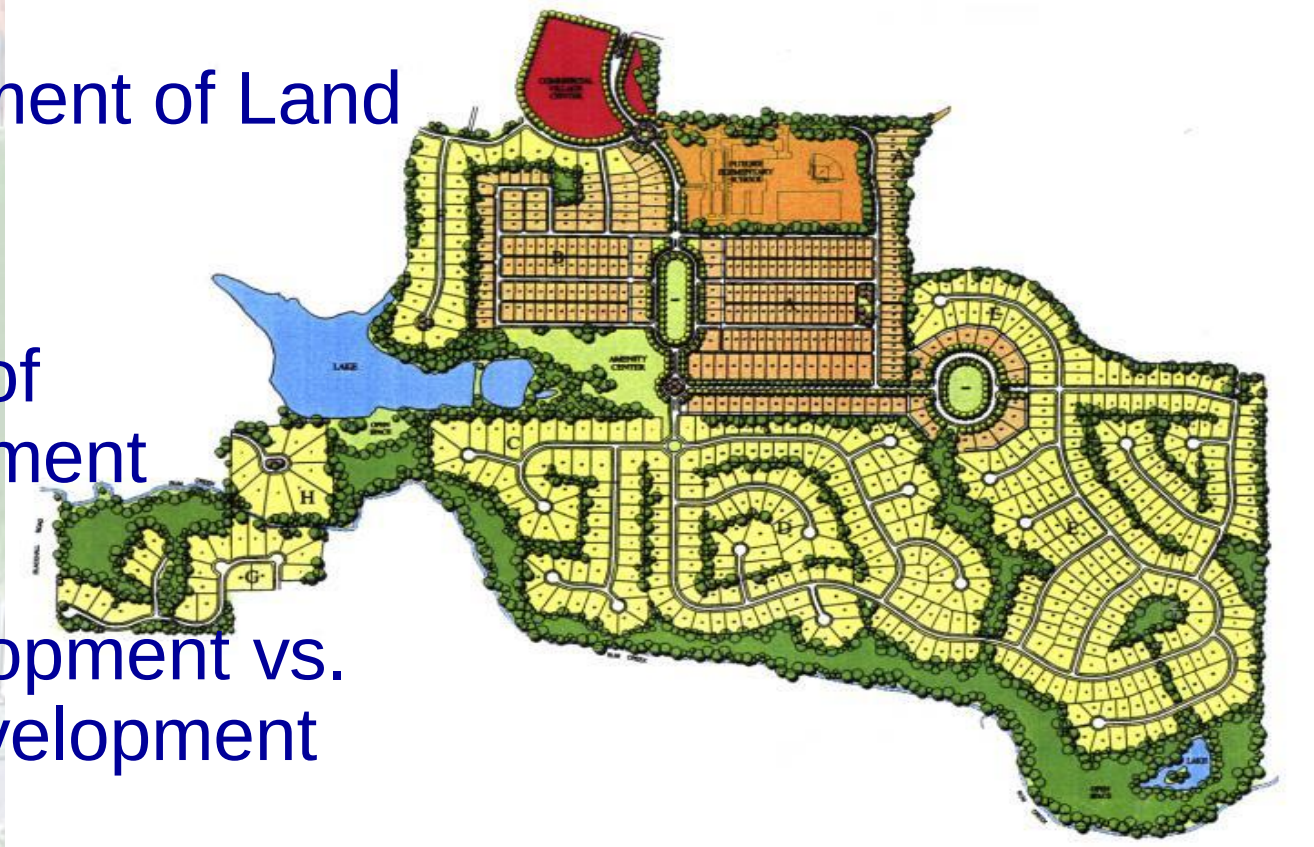
Criteria

- **Comprehensiveness**
- **Plan Consistency**
- **Administration/ Enforcement**
- **Staffing Level**

Zoning & Land Development Regulations

Consistency with Goals of Comprehensive Plan

1. Mix and arrangement of Land Uses
2. Density of Development
3. Redevelopment vs. New Development



Zoning & Land Development Regulations

Consistency with Goals of Comprehensive Plan

3. Location of Development
   - Comprehensive Plan Future Land Use Map
   - Natural Resource Protection
   - Coordination of Land Use and Public Facilities

Zoning & Land Development Regulations

Consistency with Goals of Comprehensive Plan

4. Quality of New Development

5. Timing of Development

6. Fiscal Considerations for a Healthy Tax Base

Zoning & Land Development Regulations

Environmental Issues

- Declining air and water quality
- Loss of farmland and green space
- Increasing risks from natural hazards
- Overburdened natural resources
- Equity- Environmental Justice
- Sustainability – Climate Change

Natural Resource Protection

State and Federal Regulations

Clean Water Act

Clean Air Act

Endangered Species Act

NEPA and little NEPAs

RCRA

Coastal Zone Management

Flood Insurance (FIRM)

Environmental Permits

- Federal Wetlands
- NPDES (Point/ Non-Point/TMDL)
- Soil Erosion and Sedimentation Controls
- Stream buffers

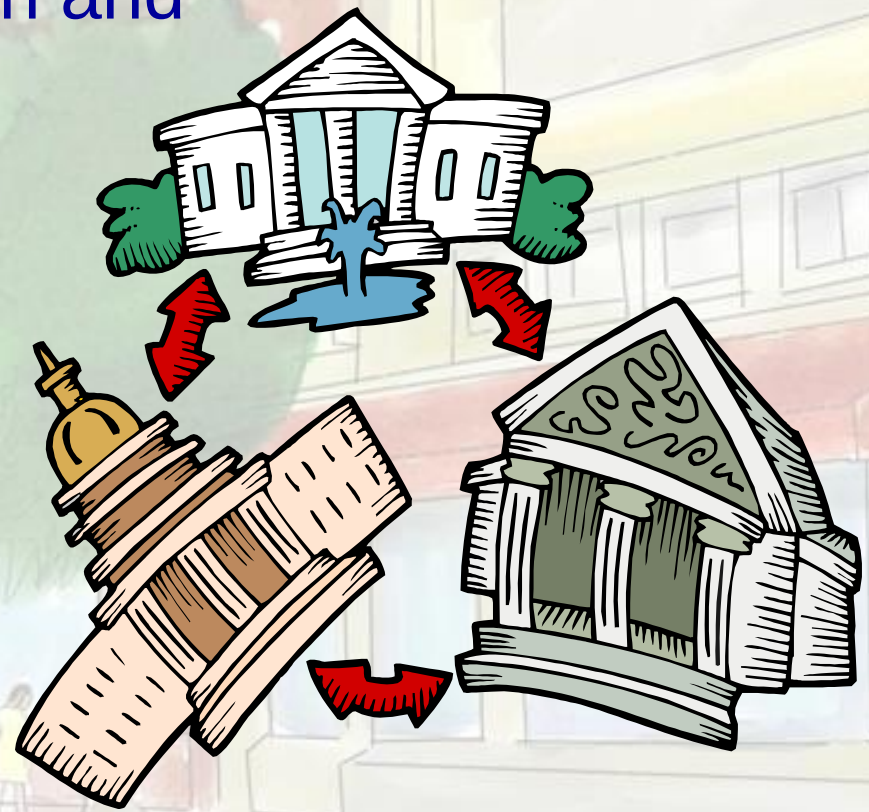
Environmental Impact Assessment

- NEPA - National Environmental Policy Act applies to federal projects
- Analytic process that determines the impact that a project or action will have on various environmental systems (Alternatives)
- May or may not require that those impacts be mitigated
- FONSI – Finding of No Significant Impact- shorter process- NEPA process satisfied
- CATEX – Categorical Exclusion – small project – no impact study warranted

Zoning & Land Development Regulations

Legal Issues

- State/ Federal Constitution and Statutory Authority
  - State Enabling Act
  - Dillon Rule/ Home Rule
- Police Powers
- Takings
  - Balancing Test
- Equal Protection
- Due Process
  - Zoning Procedures Act
- Comprehensive Plan Consistency



Zoning & Land Development Regulations

Financial Implications

Land Use Controls Affect the Cost of Development and the Value of Land

- to the City
- to property developer
- to future consumers
- to Taxpayers

Zoning & Land Development Regulations

Political Issues

The Actors

- City Council
- Planning Commission
- Board of Appeals
- Property Owners
- Developers and Attorneys
- Neighbors and Neighborhoods

Zoning & Land Development Regulations

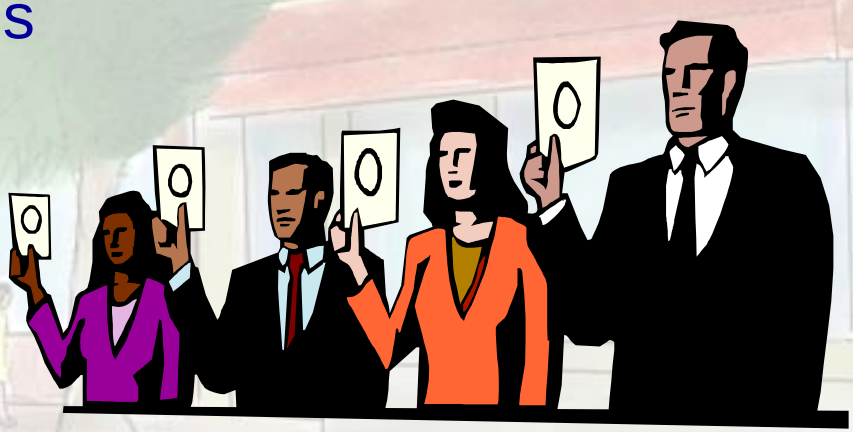
Role of Planning Commission

- Appointed by City Council or County BOC
- Recommending Body
- Public Hearings and fact-finding
  - Comprehensive Plan
  - Zoning text and map amendments
  - Conditional Use Permits

Zoning & Land Development Regulations

Role of Board of Appeals

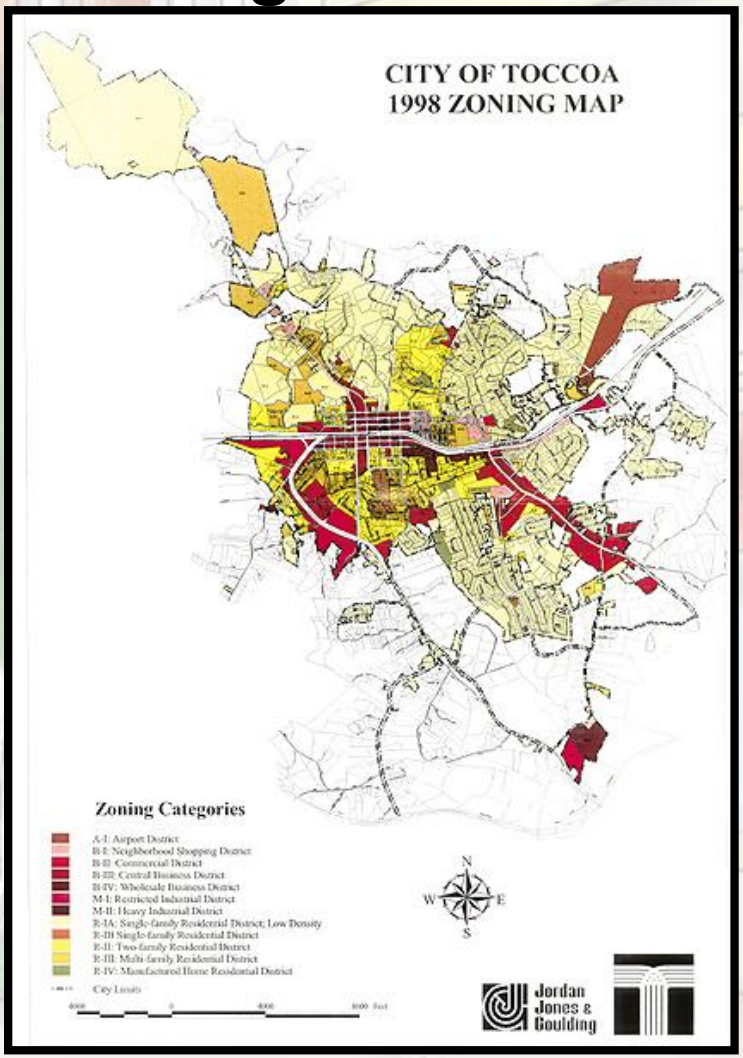
- Appointed by City Council or BOC
  Quasi-Judicial Body
- Public Hearings and
  fact-finding
  - Appeals of Administrative Decisions
  - Variances and hardships
  - Special exceptions



Zoning & Land Development Regulations

Zoning Basics – What's in a Zoning Ordinance?

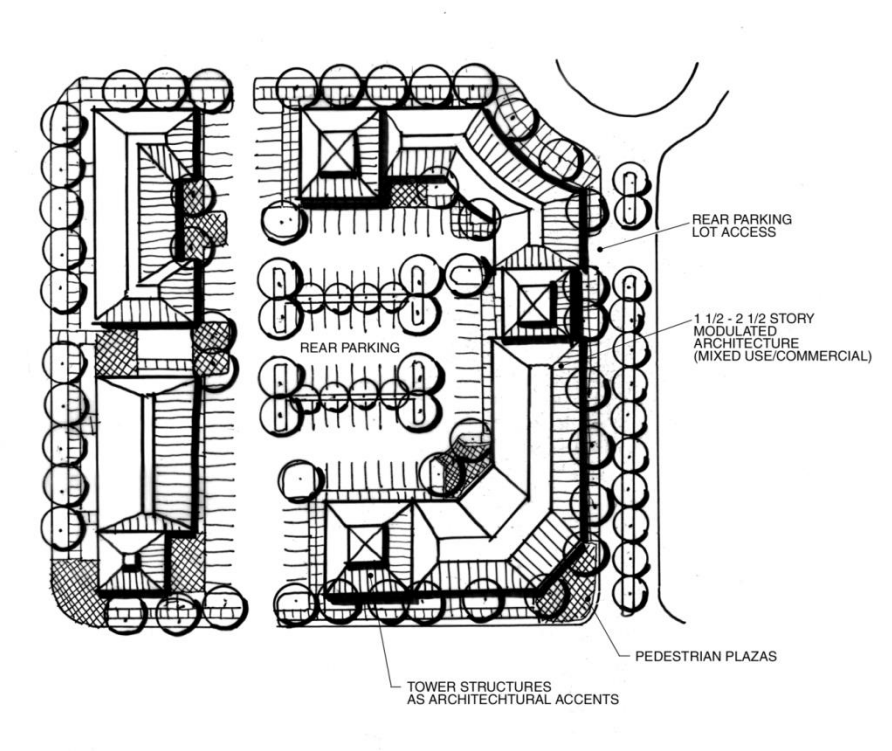
1. Zoning Map
2. Zoning Districts
   - Uses
   - Density/ lot area
   - Lot dimensions
   - Setbacks and open space
   - Lot coverage and impervious surface
   - Building height limits
   - House size



Land Development Regulations

Zoning Basics – What's in a Zoning Ordinance?

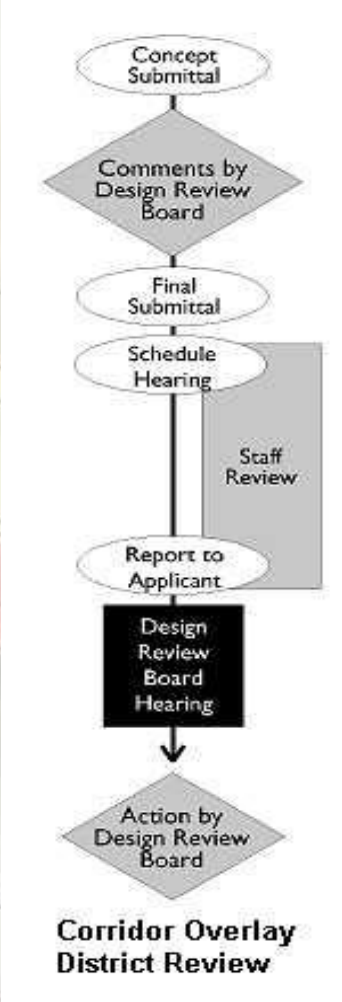
3. Standards for Special Uses
4. Buffers
5. Parking
6. Sign Controls
7. Design Guidelines
8. Administrative procedures



Zoning & Land Development Regulations

Development Process

1. Comprehensive Plan Consistency
2. Zoning Conformance or Rezoning
3. Subdivision / Plat Review
4. Recording/ Lot Sale
5. Site Engineering/ Land Development Review/ Permitting
6. Installation /Approval of Public Improvements/ Inspections
7. Building Codes/ Plan Review
8. Building Permits/ Inspection
9. Certificate of Occupancy



Zoning & Land Development Regulations

Role of Development (Subdivision) Regulations

1. Lot Design Standards
2. Public Improvements Standards
3. Environmental Standards
4. Permits and Inspections
5. Administrative Procedures

Development Plan & Project Review

Development processes/ Terminology

Rezoning, Special Use Permits, Subdivision, Variances, Boards of Adjustment, Special Use/Special Exception, Conditional Approvals, Appeals, Design Review, Site plan review, Development Review, Historic Preservation review.

Discretionary (legislative) vs. ministerial actions

Site plan review process

- Consistency with zoning, special use/ conditions of zoning, lot size, frontage, setbacks, parking, signs
- Consistency with development requirements- subdivision, public facilities and dedication, drainage, tree protection, ROW, grading, engineering, architectural standards
- **Development terms**: PUDs, development agreements, subdivision plats (preliminary, final); performance bonds, maintenance bonds

Euclidean Zoning: Problem Statement

Traditional zoning with use-separated districts:

- Emphasizes use separation
- Encourages auto-oriented development
- Is not pedestrian-oriented
- Does not allow mixed-use development
- Forces homogeneous development
- In-flexible prescriptive standards
- Weak tools for quality of design

Innovative Land Use Controls

Planned Unit Development

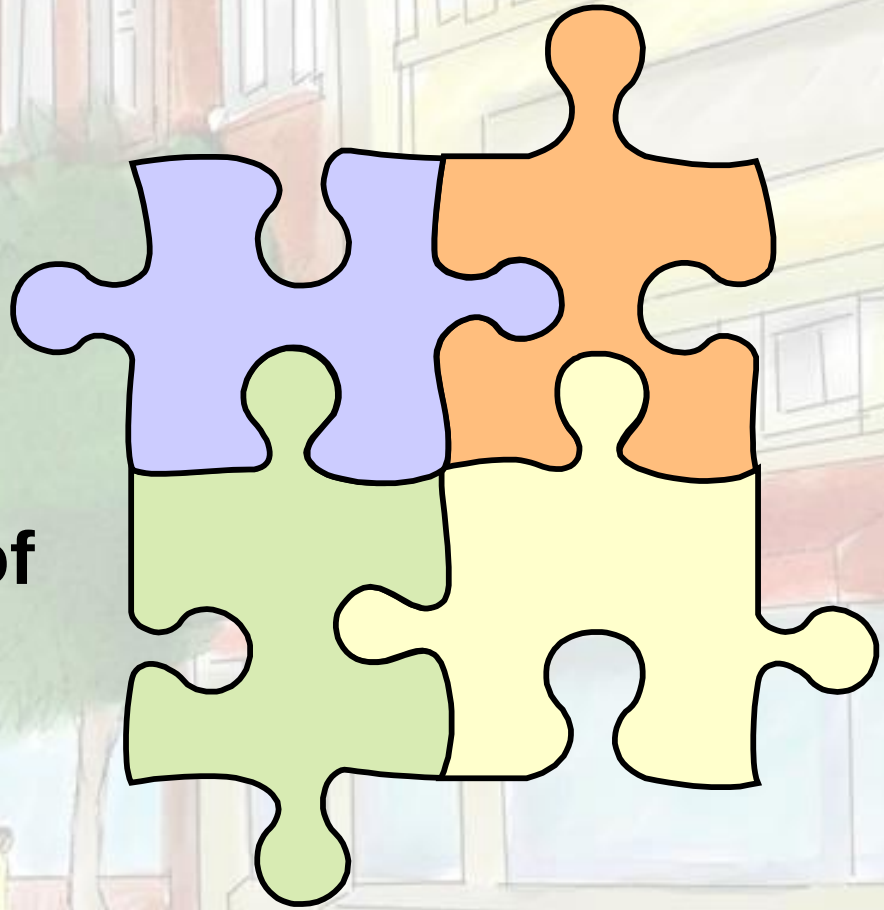
Open Space Conservation Subdivisions

Smart Growth Toolkit: www:atlantaregional.com

Mixed-Use Development

What is Mixed-Use Development?

- Combination of Complementary uses
- Horizontal or Vertically Integrated
- Significant proportions of each use
- Internally-connected
- Externally-connected



Benefits of Mixed Use Development

- ✓ Increases convenience
- ✓ Provides alternatives to car trips
- ✓ More efficient use of land (no buffers)
- ✓ More efficient use of public infrastructure
- ✓ Reduced traffic demand
- ✓ Shared parking

Form-Based and "Smart" Codes

The Transect

A. Descriptive statistics

Types of data

Four types of measurement scales

- Nominal (classifications- males vs. females)
- Ordinal (rank from highest to lowest)
- Interval (ages: 0-4, 5-9, 10-14)
- Ratio (continuous data supports exact computations - division and multiplication)

Primary data vs. secondary data

Enumeration or census vs. sample

Measures of central tendency

Mean

- Sum of items / Count of items

Median

- Sort items high to low
- Select middle item, or average of two middle items

Mode

- What value occurs most often?
- Bimodal distributions

Measures of dispersion

- Range
  - High value minus low value
- Variance
  - Subtract the mean from each value
  - Square each difference
  - Sum the squares of the differences and divide by the number of cases
- Standard deviation
  - Take the square root of the variance
  - Can relate to original units

B. Inferential statistics

What can we infer about a population given a sample size and a sample statistic?

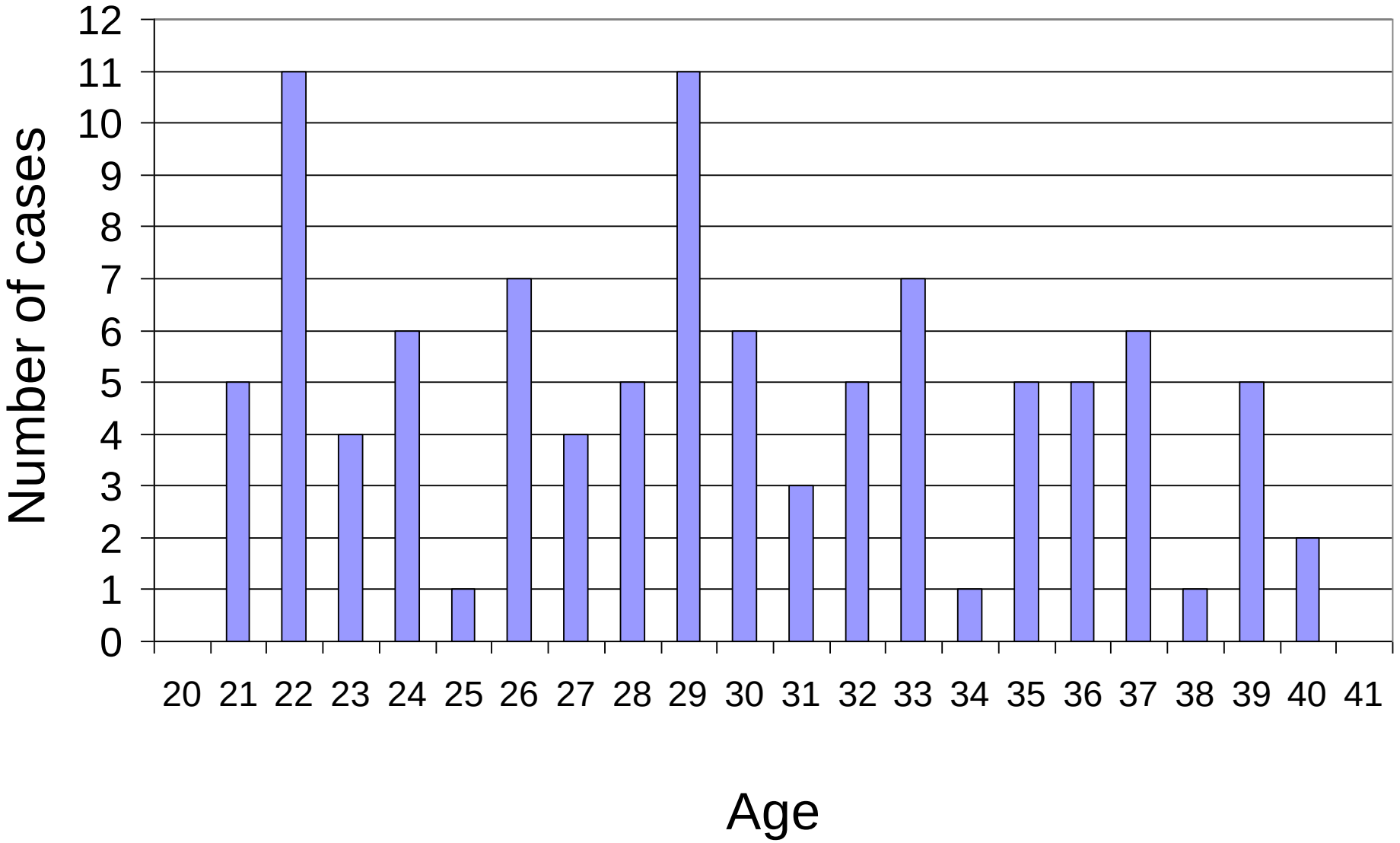
A population parameter is a (usually unknown) summary measure of a characteristic of a full population

A sample statistic is a corresponding summary measure of a sample characteristic (usually known or calculated).

Let's say these are the ages of the people now in this room.

Case	Age	Case	Age	Case	Age	Case	Age	Case	Age
1	**37**	21	**28**	41	**35**	61	**37**	81	**37**
2	**23**	22	**29**	42	**24**	62	**31**	82	**27**
3	**26**	23	**38**	43	**33**	63	**32**	83	**29**
4	**35**	24	**24**	44	**30**	64	**22**	84	**40**
5	**33**	25	**37**	45	**28**	65	**25**	85	**22**
6	**28**	26	**22**	46	**24**	66	**24**	86	**27**
7	**26**	27	**32**	47	**27**	67	**29**	87	**23**
8	**21**	28	**34**	48	**29**	68	**30**	88	**30**
9	**39**	29	**29**	49	**26**	69	**32**	89	**22**
10	**27**	30	**30**	50	**35**	70	**26**	90	**33**
11	**29**	31	**36**	51	**31**	71	**24**	91	**21**
12	**37**	32	**39**	52	**26**	72	**30**	92	**23**
13	**39**	33	**29**	53	**37**	73	**22**	93	**33**
14	**36**	34	**29**	54	**21**	74	**22**	94	**26**
15	**35**	35	**35**	55	**29**	75	**21**	95	**31**
16	**39**	36	**30**	56	**36**	76	**36**	96	**23**
17	**22**	37	**28**	57	**22**	77	**26**	97	**24**
18	**40**	38	**32**	58	**39**	78	**32**	98	**33**
19	**22**	39	**22**	59	**33**	79	**29**	99	**36**
20	**40**	40	**22**	60	**28**	80	**21**	100	**33**

Frequency Distribution



Basic calculations:

The range is 40-21 = 19

The mean is 2945 / 100 = 29.45

The variance is

- 37 – 29.45 = 7.55 (difference)
- 7.55 squared is 57.0025 (difference squared)
- Sum all 100 differences squared and divide by 100 = 30.96

The standard deviation is the square root of the variance = 5.56

The cases are bimodal. 11 people are 22 and another 11 are 29.

Now, let's take a random sample of 10 cases

Cases: 28, 70, 11, 81, 54, 66, 5, 6, 63, 37

Ages: 34, 26, 29, 37, 21, 24, 33, 28, 32, 28

The mean of these 10 cases is 29.20 but our population mean was 29.45.

Inferential statistics help us understand how reliably a (known) sample statistic represents a (usually unknown) population parameter.

Now let's take another sample of 10, and another, and another, and …

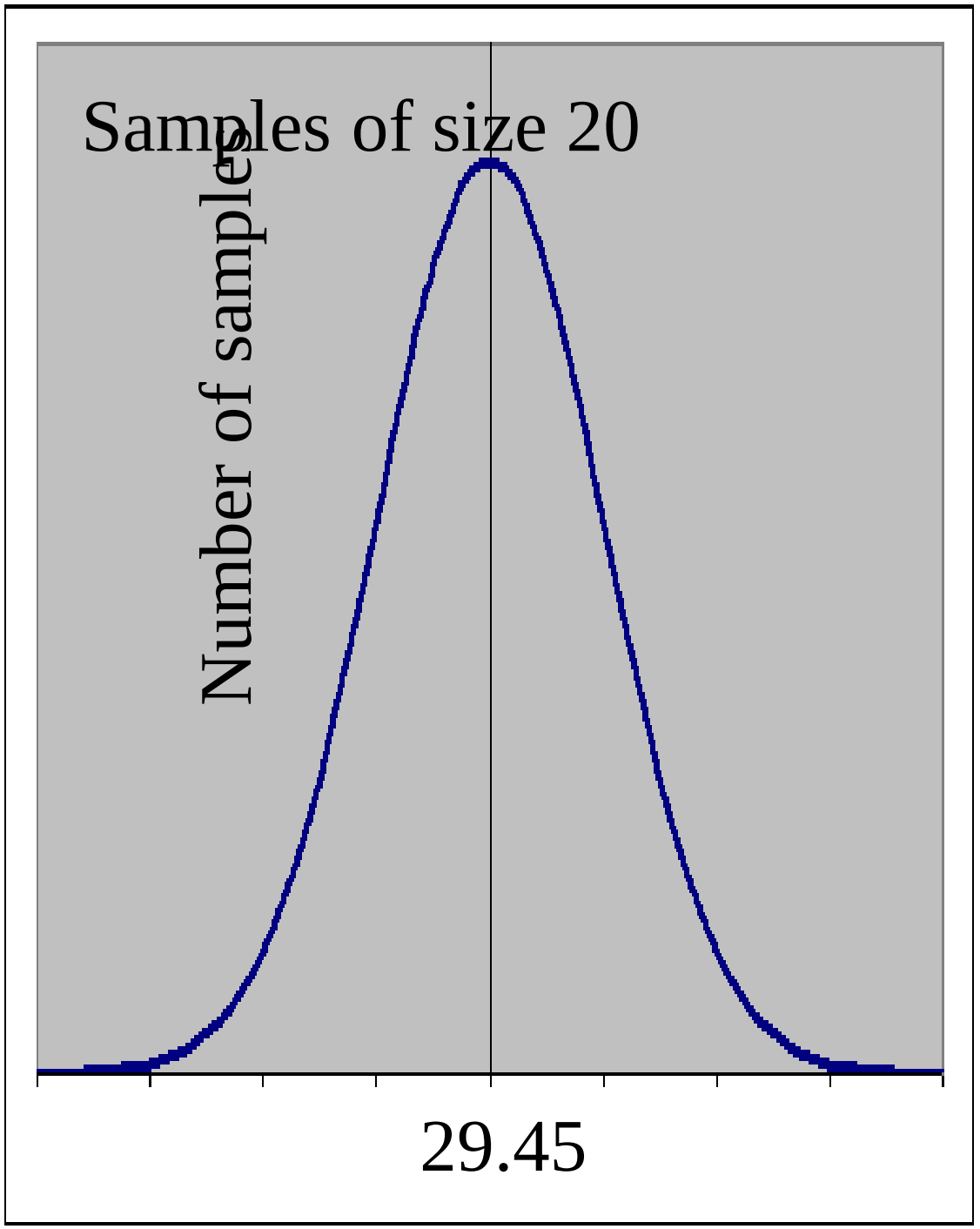
If we took many, many samples of 10, most would have means near 29.45, with a few much lower and a few much higher.

Over many samples, the mean of all the samples would come closer and closer to the population mean. This is the central limit theorem.

We can graph a frequency distribution of the mean over many samples, which is called a sampling distribution.

Sample Mean

If we took samples of 20, the curve would be narrower and higher. More samples would be closer to the real population mean, and fewer would be much lower or much higher.



Sample size and confidence limits

The standard error of the mean depends on the standard deviation of the population and the size of the sample.

- The smaller the SD of the population, the smaller the error.
- The larger the sample size, the smaller the error.

Choosing an adequate sample size depends on the two factors listed above.

You may want to be 90% certain that the mean of the sample will be within one year of the mean of the population.

C. Forecasting methods

- Intuitive methods
  - Delphi
  - Scenario writing
- Extrapolation methods
  - Assume future change of same amount added or subtracted per year (or decade)
  - Assume future change of same percentage increase (or decrease) per year (or decade, or any period)

Theoretical methods

Dependent variable or y variable:
the variable being predicted

Independent variable(s) or x variable(s):
the variable(s) used to predict

- Bivariate regression (one x variable)
- Multiple regression (two or more x variables)

Bivariate regression

Assumes a straight line can be used to describe the relationship between the independent (x) variable and the dependent (y) variable.

$y = a + b*x$

a is the line's y intercept

b is the line's slope

R^2 measures how well the line fits the data and ranges from 0.0 to 1.0

Bivariate regression

We want to predict the number of autos per household.

This is our data for 10 census tracts.

Income is listed in thousands of dollars.

Tract	Avg HH Income	Avg # of Autos per HH
1	5.0	0.3
2	8.5	0.8
3	10.2	1.2
4	11.4	1.3
5	15.6	1.5
6	20.5	2.0
7	22.9	1.8
8	26.3	2.2
9	29.6	2.1
10	34.8	2.5

Multiple regression uses more than one x variable

y (house sale price) =

x_1 * Square footage +

x_2 * Number of bedrooms +

x_3 * Number of bathrooms +

x_4 * Accessibility to employment +

x_5 * Location in historic district

When an x coefficient is positive, higher values of x lead to higher values of y; when negative, lower

D. Population analysis and projection

An estimate is an indirect measure of a present or past condition that can not be directly measured.

A projection (or prediction) is a conditional statement about the future.

A forecast is a judgmental statement of what the analyst believes to be the most likely future.

Non-component projection methods

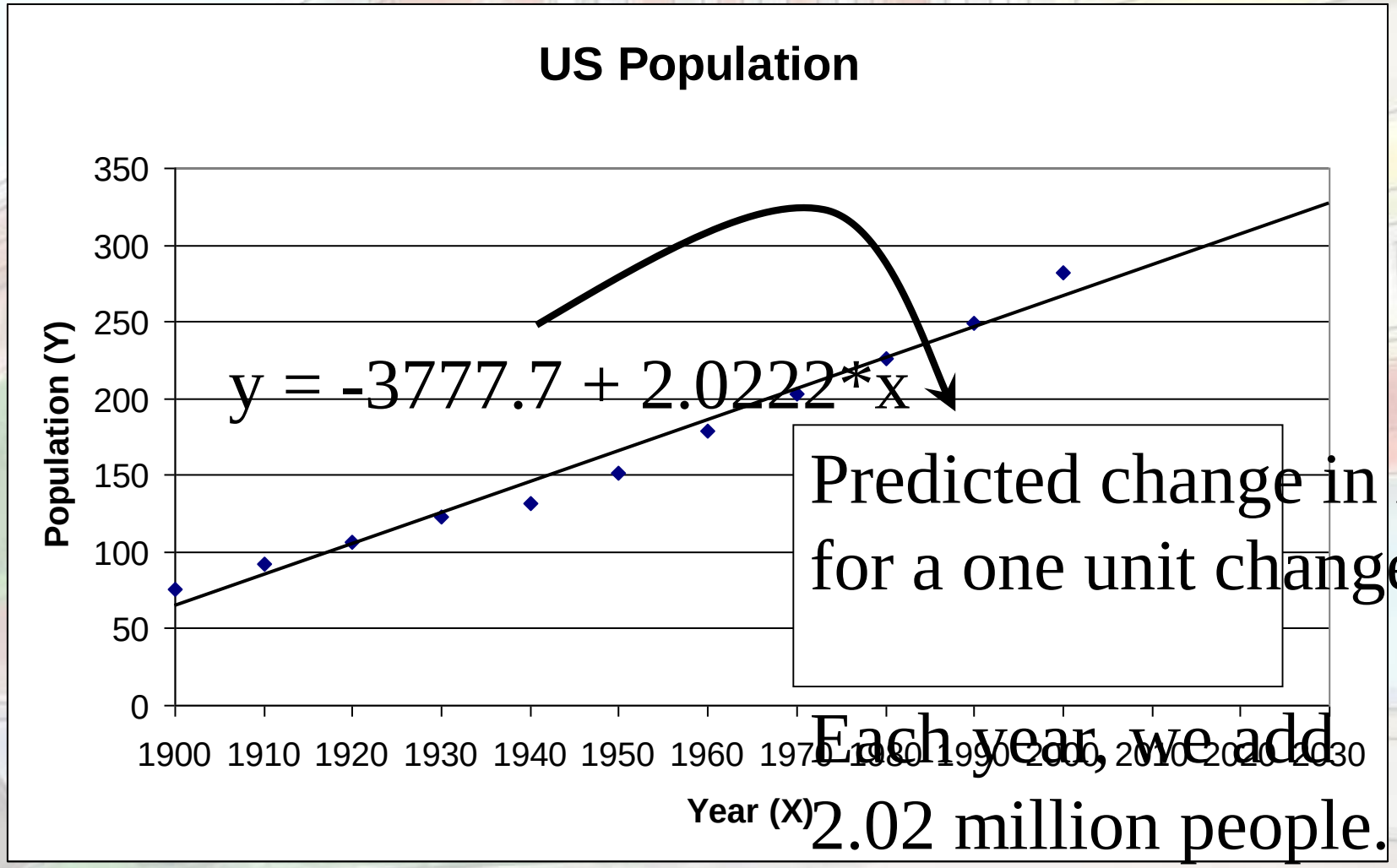
Extrapolation with graphs

Time series regression, with time (year) as the independent (x) variable

Ratio methods comparing to similar areas

Share methods using proportions of regional or state projections

Time series regression to project US population



Cohort component models

We divide the population into cohorts by age (five years), sex, and race/ethnicity.

Population change is subdivided into three components: births, deaths, migrants

Calculate birth rates, survival rates, and migration rates for a recent period

Extend those rates into the future, possibly adjusting them upward or downward

Birth and death data is readily available; migration data is difficult, apart from Census years.

Migration notes

Migration can be projected as a function of changes in employment.

Net migration = Inmigration - outmigration

Net migration can estimated by the residual method:

1990 population: 100,000

2000 population: 120,000

1990 to 2000 births: 5,000

1990 to 2000 deaths 3,000

How many 1990 to 2000 inmigrants? (18,000)

E: Economic analysis
Economic base theory

Assumes two kinds of industry

- Basic or export: sells to customers outside the area of analysis
- Service or non-basic: sells to customers within the area

Economic base multiplier

- Total employment / basic employment
- A multiplier of 4.0 says that 4 total jobs are created for every additional basic job

Location quotients

LQs compare the local concentration of employment in an industry to the national employment in that industry

$$LQ_i = \frac{\left(\frac{\text{Local employment in industry I}}{\text{Total local employment in all industries}}\right)}{\left(\frac{\text{National employment in industry I}}{\text{Total national employment in all industries}}\right)}$$

More on location quotients

Alternate formula: LQ_i =

$$\frac{\text{Local percent of employment in industry i}}{\text{National percent of employment in industry I}}$$

Interpreting LQs

- If LQ_i is greater than 1.0 we can assume an export or basic industry
- If LQ_i is less than 1.0 we can assume we import some goods or services
- If LQ_i = 1.0, the region produces just enough to serve the region, and no more

Shift share analysis

Shift share analysis interprets changes in an industry's local employment (over a period of x years) in terms of three components:

- National share: how much would local industry employment have changed if it mirrored changes in total national employment
- Industry mix: how much additional would it have changed if it mirrored national industry employment
- Local shift: how many additional jobs did the local industry gain or lose, presumably due to local competitive advantage or disadvantage.

F. Project analysis and benefit cost analysis

Many public projects have high initial costs, then produce benefits for many years.

$1,000 of benefits in 10 years is less valuable than $1,000 of benefits this year, because we could invest today's $1,000 and earn 10 years worth of interest.

Discounting reduces benefits (and costs) in future years to account for the time value of money.

Discounting and Net Present Value

Annual benefits

Figure 7–7 Basic Data for the Discounting Example

	YEAR					
	0	1	2	3	4	5
Benefits	0	$4000	$4000	$4000	$4000	$4000
Costs	$15,000	0	0	$1223	0	0
Discount rate (r)	4%	4%	4%	4%	4%	4%
Discount factor $1/(1 + r)^n$	1.0	.9615	.9246	.8890	.8548	.8219

Initial construction cost

Year 3 maintenance cost

Since many projects are evaluated by assessing their costs and benefits over some long time period, it is essential to understand both the mechanics of discounting and the major assumptions that underlie its use. Many projects will be characterized by a series of benefits (B) and costs (C) over time:

$$B_t + B_{t+1} + B_{t+2} + B_{t+3} + \ldots + B_n$$

and

$$C_t + C_{t+1} + C_{t+2} + C_{t+3} + \ldots + C_n$$

On occasion it is simply easier to speak about *annual net benefits*, which are really yearly benefits minus yearly costs:

$$(B_t - C_t) + (B_{t+1} - C_{t+1}) + (B_{t+2} - C_{t+2}) + (B_{t+3} - C_{t+3}) + \ldots + (B_n - C_n)$$

Any one of these yearly figures could be negative as well as positive. A typical public investment project ordinarily shows higher costs than benefits in the early years and higher benefits than costs in later years—or negative net benefits early and positive net benefits later. The one instance when you would not wish to compute net annual benefits before discounting would be if you wished to calculate a benefit-cost ratio. To do that, benefits and costs must be discounted separately. We will show this below.

The most commonly encountered measure of the efficiency of a public investment project is its present worth, or net present value (NPV). NPV is the sum of all discounted benefits and discounted costs for the duration of the project. Thus:

$$NPV = (B_t - C_t) + \frac{B_{t+1} - C_{t+1}}{(1 + r)^1} + \frac{B_{t+2} - C_{t+2}}{(1 + r)^2} + \ldots + \frac{B_n - C_n}{(1 + r)^n}$$

Let us illustrate the discounting procedure with an example. A project costs $15,000 to implement immediately (we won't discount, and we will call this time zero). The project returns $4000 per year in benefits every year thereafter for the next five years and has only one remaining cost, a maintenance charge of $1223 in year three. The pattern of costs and benefits is shown in Figure 7-7

Using, for example, a 4% discount rate, we can compute the net present value several ways. We will do it first by treating the cost and benefit streams separately, computing the discount factors using the formula $1/(1 + r)^n$, which yields a discount factor of .9615 for year one and .9246 for year two, e.g. $1/(1 + .04)^1$ and $1/(1 + .04)^2$.

Discounted benefits (DB)
$= 0(1.0) + 4000(.9615) + 4000(.9246) + 4000(.8890) + 4000(.8548) + 4000(.8219)$
$= 4000(4.4518) = \$17,807.20$

Discounted costs (DC)
$= -15{,}000(1.0) + 0(.9615) + 0(.9246) + (-1223)(.8890) + 0(.8548) + 0(.8219)$
$= -15{,}000 + (-1223)(.8890) = -15{,}000 + (-1087.25) = -\$16{,}087.25$

NPV Decision Criteria

1. If NPV is positive, we should undertake the project.

2. Benefit cost ratio = 17,807.20 / 16,087.25
   = **1.107**

3. Begin with the projects with the highest BC ratios.


Questions ? Comments?