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BRIDGE RATING USING KDOT FWD AND THE RELATED METHODOLOGIES

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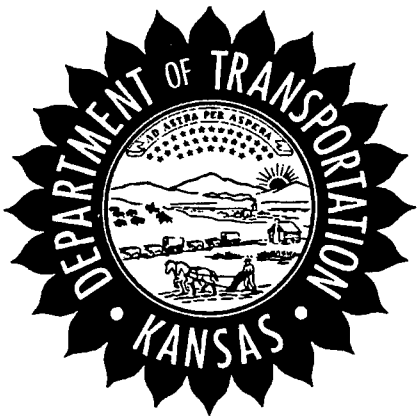

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16. Abstract

The objective of this study was to evaluate the use of a Falling Weight Deflectometer (FWD) as a tool to provide qualitative measures of the soundness of a bridge. Field experimentation using the FWD was not conducted during the study. State of the art data acquisition systems, the Lab VIEW program, and acceleration transducers were used to conduct fatigue tests on concrete beams in an effort to find the sensitivities and relationships between the natural frequency and the damping ratio to the number of fatigue load cycles.

The development of a computer code for dynamic analysis to simulate dynamic responses of continuous beams and 2 of 3-D rigid framed bridge structures was completed. Also developed was a mathematical model to estimate the reduced modulus of elasticity due to the accumulation of damages induced by service loads. This was done to provide the information needed to determine the proper locations to apply the impact excitation devices and the locations to mount the measuring devices. The measured data can be evaluated using theoretical analysis and can identify structural properties to isolate those structural members and areas that have the highest cumulative damages.

Numerical simulation methods were reviewed and the development of a computer program DR-10 to simulate continuous framed structures was completed. The numerical technique developed is very effective for simulating dynamic responses of bridge structures to moving forces.

A Master's thesis, "Methodology and Instrumentation for Vibrational Analysis of Structures for Non-Destructive Evaluation", and a Ph.D. dissertation, "Numerical Simulation of the Dynamic Responses of Bridges to Impact and Moving Mass Loads", were completed during the study and are available.

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The Kansas Department of Transportation

for the KTRAN Research Project KSU-96-1

BRIDGE RATING USING KDOT FWD AND THE RELATED METHODOLOGIES

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PREFACE

This research project was funded by the Kansas Department of Transportation K-TRAN research program. The Kansas Transportation Research and New-Developments (K-TRAN) Research Program is an ongoing, cooperative and comprehensive research program addressing transportation needs of the State of Kansas utilizing academic and research resources from the Kansas Department of Transportation, Kansas State University and the University of Kansas. The projects included in the research program are jointly developed by transportation professionals in KDOT and the universities.

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PART 3: APPENDIX B (A Ph.D. DISSERTATION) by Khalid Niazi

PART 4: APPENDIX C (A MS THESIS) by M. Sureshkumar Iyer

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[1] ACKNOWLEDGMENT

Funding for the research, presented in this report, was provided primarily through grants made by the KTRAN project KSU-96-1 "Bridge Rating Using KDOT FWD and the Related Methodologies." Mr. Kent Hurst and Mr. Gary Chan provided many valuable suggestions. Thanks to Dr. Philip G. Kirmser for help in interpreting the experimental results, to Dr. H.S. Walker and Mr. Phil Buckland for their support in instrumentation and technical support in computer systems, to Mr. Russ Gellespie and Mr. Medhat Abdullah helped in preparing concrete beams. Thanks also to Dr. S.E. Swartz for his support to this project.

Dr. Melhem served as advisor for Mr. Iyer's M.S. thesis "Methodology, and Instrumentation for Vibrational Analysis of Structures for Non-Destructive Evaluation".

The development of the computer program on dynamic responses of bridges, reported here, was supported in part by the College of Engineering and a closely related project: The R&D of Commercialization of the stiffness decoupler for Base Isolation of structures. Both projects study fundamental issues surrounding structural vibrations. In particular, whether the stiffness decoupler can be applied to support bridge structures to reduce temperature stresses and to accommodate dynamic responses induced by earthquakes.

[2] INTRODUCTION

Bridge structure safety is one fundamental issue surrounding the safe use of our transportation system. Thus, being able to provide quantitative measures of the soundness of a bridge is crucial. A bridge rating attempts to provide a measure of the cumulative damages induced by service loads and by ageing processes. The research described here focuses on what parameters and techniques for measuring them.

Currently, bridge quality assessments, other than inspections, are obtained through cost prohibitive data measurement techniques. i.e., stain gages. This research is concerned with providing reliable measurements at a reasonable cost. Providing KDOT engineers with a cost-effective tool for getting reliable data for bridge rating requires further research.

The research team at Civil Engineering Department of K-State applied cross-disciplinary methods in the study of the problem. They proposed and studied exploratory tasks. Solutions and suggestion were found in the following areas.

- ***Mathematical and Numerical Modeling***
  a) To predict the natural frequencies and the corresponding vibrating modes.
  b) To simulate the dynamic responses of a bridge structure to moving and impact loads.
  c) To understand the cumulative damage phenomena by the use of numerical modeling.
  d) To provide dynamic properties of a bridge structure for concerning seismic loads.

- ***Identification of Instrumentations and Data Acquisition System***
  Economical and practical Instruments and data acquisition system that can provide accurate measurements were identified and used for the investigation.

- ***Experimental Analysis***
  a) To illustrate the use of the hardware and software.
  b) To measure and analyze the dynamic response of model beams
  c) To verify the theoretical prediction
  d) To determine the damping ratio of plain concrete beams and that of the steel reinforced beams.
  e) To determine the changes of dynamic responses of model structures to predict the cumulative damages induced by cyclic fatigue loads.

The major accomplishments of the project are:

- Mr. M.Sureshkumar Iyer completed a thesis "Methodology, and Instrumentation for Vibrational Analysis of Structures for Non-Destructive Evaluation" for his MS degree, (Dr. Melhem serves as the major advisor). Experimental investigation, the newly available data acquisition system, LabVIEW and acceleration transducer were used to do fatigue tests on concrete beams. The main object of the study is to find the sensitivities and relationships between the natural frequency and the damping ratio to the cycle numbers of fatigue loads.
- Dr. Khalid Niazi has completed his Ph.D. dissertation on "Numerical Simulation of the Dynamic Responses of Bridges to Impact and Moving Mass Loads." This work thoroughly reviewed 124 references that lead to a very efficient methodology for simulation dynamic responses of bridges.
- Completed the development of a computer code for dynamic analysis to simulate dynamical responses of continuous beams and 2 of 3-D rigid framed bridge structures.
- Completed the development of a proposed mathematical model to estimate the reduced modulus of elasticity, E=E(x, y, z, t), due to the accumulation of damages induced by the service loads.
- Proposed a methodology to determine the life cycle for member subjected to general stresses.

In this report the final results of experimental and theoretical investigation of the bridge rating problem are summarized. Appendices A B and C are included to provide more detailed information. It is hoped that these results can be used by KDOT engineers to save time and expense by raising the level of understanding of this problem. However, in order to effectively mange bridge safety with accurate bridge rating predictions, more research is needed to obtain empirical data on each bridge type.

[3] ON THE USE OF ACCELEROMETER AND THE DATA ACQUISITION SYSTEM

To have some reliable measurements of dynamic responses of a structure, a measuring system should have

a) a built-in amplifier to have high sensitivity

b) a built-in filter to remove noises for better clarity

c) a built-in feature to select the range of interest

d) a system that can accept analog input for fast sample rates

e) a set of analyzers to analyze, interpret and display data.

Most of the accelerometer (acceleration transducers) available in the market are sensitive enough to measure accelerations with very small amplitudes. They can be used over a very broad frequency range, say from 10 Hz to 10 KHz. Therefore, it is appropriate to use accelerometers as the devices. They either can be used mounting them on the structure directly, or mount them on a mounting element then indirectly apply to the point of interest, to get the dynamic signal. The features of the transducer used in the experiments for this project are listed as follows:

Frequency Range:	10 Hz to 40 KHz
Maximum Acceleration:	40 g (1 g=32.2 ft/sec)
Sensitivity:	100 mV/g

Thus, it satisfies the condition a) listed above.

The LabVIEW system, developed by National Instrument Inc., was selected and used as the data acquisition system for collecting, analyzing and displaying the data analyzed. It is a kind of system of Virtual Instruments that has the following main features:

GUI system	Front Panel being used for pictorial modular icons to connect Vis to form virtual instruments.
Data Acquisition VIs	It Accepts Analog Input, Intermediate Analog & Advanced Analog Inputs with sample rate 250 K/s. Buffer is used to store data then saved in a data file. It allows users to select frequency range and filtering the noises of low and high frequencies.
Data Analysis VIs	Built in VIs to processing digital signal with code-interface for auto-spectrum, auto-power-spectrum, cross-spectrum, & frequency-response analysis of the dynamic responses. It gives graphic displays.

Thus, LabVIEW system, introduced above, is practical and is adequate to meet the desired functions as stated early. More information to introduce LabVIEW, its application and some experimental procedures were presented in the Appendix C.

[4] DETERIORATION OF CONCRETE BEAMS BY FATIGUE LOADS

To show the applicability of LabVIEW system, and to learn the basic behavior of the cumulative damage of concrete beams under a set of fatigue loads, plain-concrete beams with f_c'=4,000 psi (W/c=0.47), and micro-reinforced-concrete beams were cast and tested. Only the test results of plain concrete part are briefly reported here (the detail of the testing procedures and testing results is reported in Appendix C). The MTS system was used to apply an 11 Hz four-point dynamic load at a level of 50% of the ultimate lateral load, from zero to 1300 lb, sinusoidal shaped. The fatigue loading was temporarily stopped at 500, 1000, 1500, 2080 and 2800 cycles during the fatigue tests so that the dynamic response of a damaged beam could be evaluated by a designed impact load described in the next paragraph.

After the beam specimen had been loaded a number of fatigue load cycles, it was removed from the MTS testing machine and rested on a pair of 4" right triangular, cast iron prism supports with a 1/4 inch truncation at the top. The dynamic response of the specimen was recorded under the application of an impact load. Each impact was induced by dropping a spherical steel ball of one inch diameter, from rest, free falling from a height of 6" and striking at the mid-point of the damaged beam. The natural frequency of the undamaged specimen, showed by the data, through LabVIEW, was 2140 Hz.

No knife-edge-clamping devices were used to keep the specimen from moving at the ends, which allowed small defections while it vibrated. Thus it should be considered as a free-free beam with the dead load of the beam simply supported. With this understanding, good agreement was recorded between the measured frequency and that obtained by the theoretical prediction for a free-free beam. Young's modulus calculated according to the ACI code for concrete of f_c'=4 ksi, was E=3,605 ksi. The detailed analysis of natural frequency of concrete beams will be reported in section [10].

[5] A PROPOSED FORMULA FOR INDEXING THE DEGREE OF DAMAGES

Comparing the responses measured, it is clearly showed that the natural frequencies for free vibration and the damping ratios, of damaged beams decreases with the increased number of cycles of fatigue loads. The only exception is when they nearly reach the ending number of fatigue cycles. However, the elastic strain energy retained in the damaged beam to maintain the motion of the dominating mode of free vibrations, calculated from the measured data, decreases consistently with the progressive cumulative damage through fatigue or service loads.

This observation lead Hu and Iyer to use the following damage index formula

$$D_{degree\ of\ damage} = 1 - \frac{A_{damaged\ structure}}{A_{undamaged\ structure}}, \qquad (1)$$

The value of the damage index equals to zero when it is new, and it approaches to one when it is reaching to a state of fracture. Thus, it reflects the degree of the cumulative damages of structures induced by service loads at the time of evaluation. The notations of A's in eqn(1) are areas. Integrating the function of the auto-spectrum calculates them over the intervals of the dominating peak. Note that the frequency at the peak corresponding to the natural frequency of the lowest mode. A plot shown here is selected from the fatigue tests to illustrate the idea.

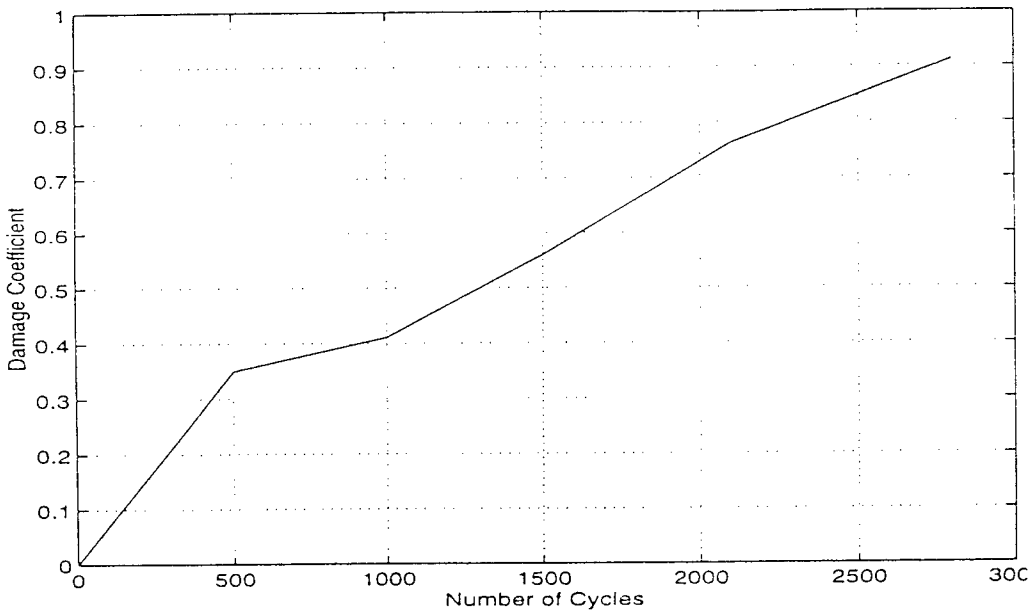

Fig.1 The damage index for concrete beams versus fatigue load cycles

We expect that some similar testing results, one for each typical bridge type, can be reproduced. i.e., one can establish a set of indexing system for the assessment of cumulative damage, induced by service loads, to a bridge. Then, engineers can use them to monitoring the safe use of bridge structures. e.g., once the damage index of a bridge has reached a level of 60% to 70%, the

cumulative damage caused in the bridge has reached a critical level. It is time for bridge engineers to close down the traffic thus allowing them to strengthen the existing bridge or to replace it with a new structure. Note also that cumulative damage involves not only traffic loads, but is also related to the envirormient of the bridge site, the quality of construction, maintenance, etc. Thus the system not only needs the establishment of the standard deviation of the experimental data, but also requires calibration factors based on field observations.

[6] BRIDGE PERFORMANCE INDEX, CHANGING RATES AND STATISTICS

On the other hand one can use the following formula to calculate the performance index

$$R_{Bridge\ Rating\ Index} = \frac{A_{damaged\ structure}}{A_{undamaged\ structure}} . \qquad (2)$$

This ratio stands for the relative performance against itself when it was new. When the performance index reaches a level of 0.5 the bridge requires more frequent inspection and it is time to find ways to strengthen the structure to improve its performances. When the performance index reaches a low level of 0.4 to 0.3, the serviceability of a bridge structure is in doubt. It is well known, once the damage of a structure is severe enough it accelerates the damaging process. e.g., the lengths of flaws become unstable which leads to an increased rate of crack propagation. The bridge becomes very vulnerable to the impact loads that are normally induced by moving loads.

Note that both the performance index or the damage index relies on the reference record of the bridge, which was recorded when it was new. However, to evaluate an existing bridge there is no reference record available. This makes the methodology useless. We need to establish a knowledge base on how the dynamic responses of a bridge change with variations in impact loads, moving loads or harmonic excitations and how this is related to the remaining life cycles (or the cumulative damage level). This suggests some urgent needs for more research work through theoretical, numerical and experimental investigations to establish the knowledge base.

Good experiments conducted in the field, can reduce the scattering of experimental data and can increase their usefulness. This requires the ability to determine the sources of error and noises that can cause the scattering. Engineers also need the ability to evaluate the relationships between input and output for better arrangement of instruments. This implies that modern engineers need to be equipped with more advanced engineering principles, experience, and analytical skills with convenient tools to conduct right tests and to give correct interpretations of the data based on the

statistics obtained. It is our belief the skills in structural dynamics and its simulation can give engineers better judgement and proper use of these data.

[7] STRUCTURAL DYNAMICS AND DYNAMIC TESTS OF BRIDGE STRUCTURES

To do sensible testing of bridges under the application of an impact load (or impact loads) or by moving test vehicles one needs the knowledge in structural dynamics to understand how to select proper locations, magnitudes, and the range of frequencies to measure the dynmic responses of structures.

Vibrating shape functions for various modes have their node points, crests, and valleys. The points to mount the measuring instruments or the points of application for excitation devices should be selected at crests and valleys for sensible measurements. On the other hand, based on the theoretical analysis, one can unfold the measured data. Then, based on the results of some backward analysis, engineers can identify structural properties to isolate those structural members and areas that may have highest possible cumulative damages.

Better knowledge to understand the dynamic behavior of bridges can provide better experimental work in obtaining reliable data. Correct data analysis can provide intelligent engineering judgement to monitoring the safety of bridge usages. Thus, the major efforts in the current investigation are to develop the methodology and computer code for simulating the dynamic behavior of bridge structures.

[8] A MATRIX EQUATION OF MOTION FOR BRIIDGE STRUCTURES

Introducing the following matrices,

$[M]$ = the mass matrix
$\{ \ddot{u} \}$ = the vector of accelerations
$[C]$ = the matrix of viscosity
$\{ \dot{u} \}$ = the vector of velocity
$[K]$ = the stiffness matrix of the structure
$\{ u \}$ = the vector of the displacements
$\{ F \}$ = the vector for the forcing function

(3)

The matrix equation can characterize the motion of a linear structure, having n degrees of freedoms,

$$[M]\{\ddot{u}\} + [C]\{\dot{u}\} + [K]\{u\} = \{F\} \quad (4)$$

Sequentially, these terms in eqn (4) are vectors of the components of inertia forces, damping forces, elastic forces and external forces. Note that this equation is applicable to any bridge type since the stiffness matrix is independent of displacement. (i.e., if the displacement components of a structure during vibrations are small enough so that the effects induced by deformations are too small to be considered). The use of finite element method, other numerical, or analytical modeling methods, can generate the mass matrix and stiffness matrix. However, the damping matrix is difficult to calculate. As stated by Tony Valetros, in a lecture given at FEMA's Summer Institute, (for the National Earthquake Hazards Reduction Program), that structural engineers can use the field measured data to estimate structural damping but cannot be calculated. As for the solution of the motion of a structure, only very simple cases can find the answer analytically. The simulation of structural vibrations relies on the use of numerical integrations to solve the system of partial differential equation.

The pre-processor and post-processor parts of the software package developed at KSU mainly focused on the dynamic simulation of continuous beam and framed bridges. However, its analyzer is applicable to most linear structural systems. To make the system applicable to general cases, the development of additional subroutines is needed. An abstract of dynamic analysis of beam and framed structures is presented in the following sections. Modifying the software to make it able to solve structures with moderate non-linearity is possible if engineers need it.

[9] THE EQUATION OF MOTION FOR EULER-BERNOULLI BEAMS

9.1 Forced Vibrations

Including the inertia forces analysis, the equation of transverse motions of Euler-Bernoulli beams have the following form

$$\rho A \frac{\partial^2 u}{\partial t^2} + c \frac{\partial u}{\partial t} + \frac{\partial^2}{\partial x^2}\left[E(x)\, I(x) \frac{\partial^2 u}{\partial x^2}\right] = p(x, t \quad (5)$$

In which the first term is the inertia force, the second term is the viscous damping force and the third term is the elastic or restoring force of the beam. The last term, p(x, t), is the forcing term. The solution of this equation is the solution of a forced vibration of beam structures.

9.2 Free Vibration

We call vibrations caused by some initial displacement or velocity, without the application of excitation forces, free vibrations. Free vibration analysis yields the desired modal shape functions and the values of the corresponding frequencies of a structure. Note that the model shape functions possess the desired property of orthogonality. This property can simplify the computation for forced vibrations and the dynamic simulations of bridge structures. Therefore, the investigation of free vibrations of a structure plays an important role in the dynamic analysis of structures.

The values of the damping ratio depend on the type and age of a structure. Without the installation of mechanical damping devices, the range of damping ratios for most structures is about 0.01 to 0.07. For example, estimated damping ratios for reinforced concrete structure is around 0.04 to 0.05. Non-composite steel girder bridges, (i.e., they do not have shear connectors between slabs and steel girders), could have their damping ratios reach 0.07 to 0.1. More reliable value should be based on field measured data. The book "Vibration Damping of Structural Elements," C.T. Sun and Y.P. Lu is an excellent reference book. It is a good practice to use the results of free vibration analysis of a structure, (i.e., ignore the damping temporarily), to diagonalize the mass and stiffness matrices. To complete the damping matrix C, just assigning the modal damping ratio to each mode properly. In this manner, structure engineers can avoid the difficulty in finding the damping matrix for each element

9.2.a The Effects on Damping Ratio

We can misinterpret the physical meaning damping ratio easily. e.g., the damping ratios for well-constructed steel structures could be ranging from ξ=0.01 to ξ=0.02. It gives the impression that the damping is insignificant. Note that ξ itself is not the reduction rate of amplitude. The rate of $e^{-2\pi\xi}$ is the expression for the reduction in amplitude of free vibrations per period. The following table shows the relationships between the reduced amplitudes, after one and two complete cycles of oscillations, and the ξ-values. It can provide some insight about how to select damping ratios in real simulations.

Amplitude Reduction Factors, $F_1(\xi)$, for Damped Free Vibrations

Cycle \ ξ	1%	2%	4%	5%	6%	8%	10%	15%	20%	30%	50%
$F_1(\xi)$	93%	88%	78%	73%	69%	60%	53%	39%	28%	15%	4.3%
$F_2(\xi)$	88%	78%	60%	53%	47%	37%	28%	15%	8.1%	2.3%	.19%

Note that $A_{n+1} = F_1(\xi)\, A_n$, $A_{n+2} = F_2(\xi)\, A_n$, i.e., amplitudes decrease exponentially from cycle to cycle.

9.3 Free Vibrations of Uniform Simple Beams

The motions of free vibrations of a uniform, simple beams, (without damping), are

$$y(x,t) = [\, y_n \cos\omega_n t + \frac{v_n}{\omega_o} \sin\omega_o t \,] \sin\frac{n\pi x}{\ell}$$
$$\omega_n = \left[\frac{n\pi}{\ell}\right]^2 \sqrt{\frac{EI}{m}}, \quad \text{or} \quad T_n = 2\pi \left[\frac{\ell}{n\pi}\right]^2 \sqrt{\frac{m}{EI}}, \tag{6}$$

for n=1, 2, ...,. Here, y_n and v_n are the initial values of the amplitude and speed of the motion having a period of T_n specified above.

9.4 The General Solutions for Free Vibrations of Uniform Beams

Introducing an eigen value, β_n for the nth natural frequency ω_n as

$$\beta_n = \sqrt[4]{\frac{\omega_n^2 m}{EI}}, \quad \text{with,}$$
$$m = \frac{w}{g} = \rho A \tag{7}$$

the general solution for nth model shape function for the free vibration of uniform Euler-Bernoulli beams is

$$u_n(x) = A\cosh\beta_n x + B\cos\beta_n x + C\sinh\beta_n x + D\sin\beta_n x \tag{8}$$

Using the general solution, we can derive the characteristic equation for the determination of β_n and ω_n easily and are discussed as follows.

a. Cantilever Beams

Let the cantilever beam be fixed at x=0 and free at x=L, then the eigen value, β_n ,satisfies the characteristic equation

$$[\cosh\beta_n L + \cos\beta_n L]^2 = \sinh^2\beta_n L - \sin^2\beta_n L$$

or

$$\cos\beta_n L = -\frac{1}{\cosh\beta_n L} \tag{9}$$

and the modal shape function reads

$$u(x) = A[\cosh\beta_n x - \cos\beta_n x] + B[\sinh\beta_n x - \sin\beta_n x],$$

with

$$B = -A\frac{\cosh\beta_n L + \cos\beta_n L}{\sinh\beta_n L + \sin\beta_n L}. \tag{10}$$

The angular frequencies of the first three modes are

$$\begin{bmatrix}\omega_1\\ \omega_2\\ \omega_3\end{bmatrix} \approx \sqrt{\frac{gEI}{wL^4}}\begin{bmatrix}(1.875)^2\\ (4.694)^2\\ (7.855)^2\end{bmatrix}. \tag{11}$$

Approximate values of the angular frequency for n≤4 are

$$[\beta L]_n \approx (2n-1)\frac{\pi}{2}$$

i.e.,

$$\omega_n \approx \frac{[(2n-1)\pi]^2}{4}\sqrt{\frac{gEI}{wL^4}}. \tag{12}$$

b. Free-Free Beams

Free-free beams do not have real usages for bridge structures. However, it occurs naturally in the experimental work. e.g., the behavior of a beam specimen that is rest on a pair of nearly triangular supports is almost like a free beam. For simplicity, we can classify the modal shape as symmetric and asymmetric sets. Let the origin of x be at the midpoint of the beam, then the even and odd functions characterize the shape functions of these two sets. i.e.,

$$u_n(x) = A\cosh\beta_n x + B\cos\beta_n x$$

and

$$u_n(x) = C\sinh\beta_n x + D\sin\beta_n x, \tag{13}$$

respectively. The corresponding characteristic equations are:

$$\tanh(\beta_n L/2) = -\tan(\beta_n L/2),$$
$$\text{and} \qquad \tanh(\beta_n L/2) = \tan(\beta_n L/2), \tag{14}$$

respectively. Approximate values of the Eigenvalues of the equations are:

$$\begin{bmatrix}\omega_1\\ \omega_2\end{bmatrix} \approx \sqrt{\frac{gEI}{wL^4}} \begin{bmatrix}(4.730)^2\\ (7.853)^2\end{bmatrix}$$

and,

$$[\beta L]_n \approx (2n+1)\frac{\pi}{2} \tag{15}$$
$$\omega_n \approx \frac{[(2n+1)\pi]^2}{4}\sqrt{\frac{gEI}{wL^4}}.$$

for $n = 3, 4, \cdots$.

It is clear, even for very simple cases as shown above, analytical methods for finding solutions of dynamical responses are complicated and engineers prefer numerical solution. Natural frequencies for uniform beam structures are given in standard text books. The "Standard Handbook for Civil Engineers," edited by F.S.Meeritt, M.K.Loftin and J.T Ricketts has a clear introduction in structural dynamics. The book of Kolousek, "Dynamics in Engineering Structures" has many intresting topics using classic method to handle structural dynamics approximately. Another typical text books in "Dynamics of Structures" by approximate W.C.Hurty and M.F.Rubinstein (Prentice-Hall, 1964) and that by R.W.Clough and J.Penzien (McGraw-Hill, 1993) are excellent references.

[10] VERIFICATION OF NATURAL FREQUENCY OBTAINED EXPERIMENTALLY

The theoretical predicted value of the frequency for the first mode, for a simply supported beam, f_c'=4 ksi, 3" x 4" having a span length of 15.25", is

$$f_1 = \frac{\omega_1}{2\pi} = \frac{\pi}{2}\sqrt{\frac{gEI}{wL^4}}$$

i.e.

$$f_1 = \frac{\pi}{2}\sqrt{\frac{386.4\ (3{,}605{,}000)\ \frac{3*4^3}{12}}{[3*4\ \frac{150}{12^3}]\ 15.25^4}} \qquad (16)$$

$$= 989.3 \text{ Hz.}$$

This kinds of specimen was used in the investigation to identify the correlations between the change of dynamic responses to the fatigue cycles of the plain concrete beams. As shown in Fig. 2, the lowest frequency obtained by Mr. Iyer through the experimental data is

$$f_{1,expr.} = 2{,}140 \text{ Hz.} \qquad (17)$$

The discrepancy is too great to be acceptable. Thus, last Fall Hu and Niazi were investigating the source that could cause the disagreement. Dr. Niazi discovered that the natural frequency of the concrete beam, using the LabVIEW system to recording and analyzing the vibrations of the concrete beam by different ways to start the motion, the frequencies obtained all equal to f_1=2140 Hz. Later Dr. P.G. Kirmser discovered that the concrete block did not have knife edge clamping devices to enforce the satisfaction of the theoretical conditions for simple supports. According Dr. Kirmser, a specimen rest on a flat surface, (with a width of .25"), should behave as a free-free beam.

$$f_1 = \frac{\omega_1}{2\pi} = \frac{(\beta_1 L)^2}{2\pi}\sqrt{\frac{gEI}{wL^4}}$$

i.e.

$$f_1 = \frac{(4.730)^2}{2\pi}\sqrt{\frac{386.4\ (3{,}605{,}000)\ \frac{3*4^3}{12}}{[3*4\ \frac{150}{12^3}]\ 16^4}} \qquad (18)$$

$$= 2036 \text{ Hz.}$$

These differences could due to inaccurate value for the Modulus of elasticity or due to the use of the

flat supports that could make the equivalent length slightly shorter than the actual length. The corrected value for Young's modulus of elasticity and the equivalent length for having $f_1 = 2140$ are

$$L_{EQUIVALENT} = 16''\sqrt{\frac{2036}{2140}} = 15.6'', \quad \text{or} \quad E_{CORRECTED} = 3,605\sqrt{\frac{2140}{2036}} = 3696\,ksi\,. \tag{19}$$

The differences between the assumed values and the corrected values are less than 2.5%. Thus the natural frequencies measure by the dynamic tests conducted by the research team for the project, at KSU were not simply supported beams, as reported in the appendix C. Instead, all the frequencies measured were free vibrations of free-free beams.

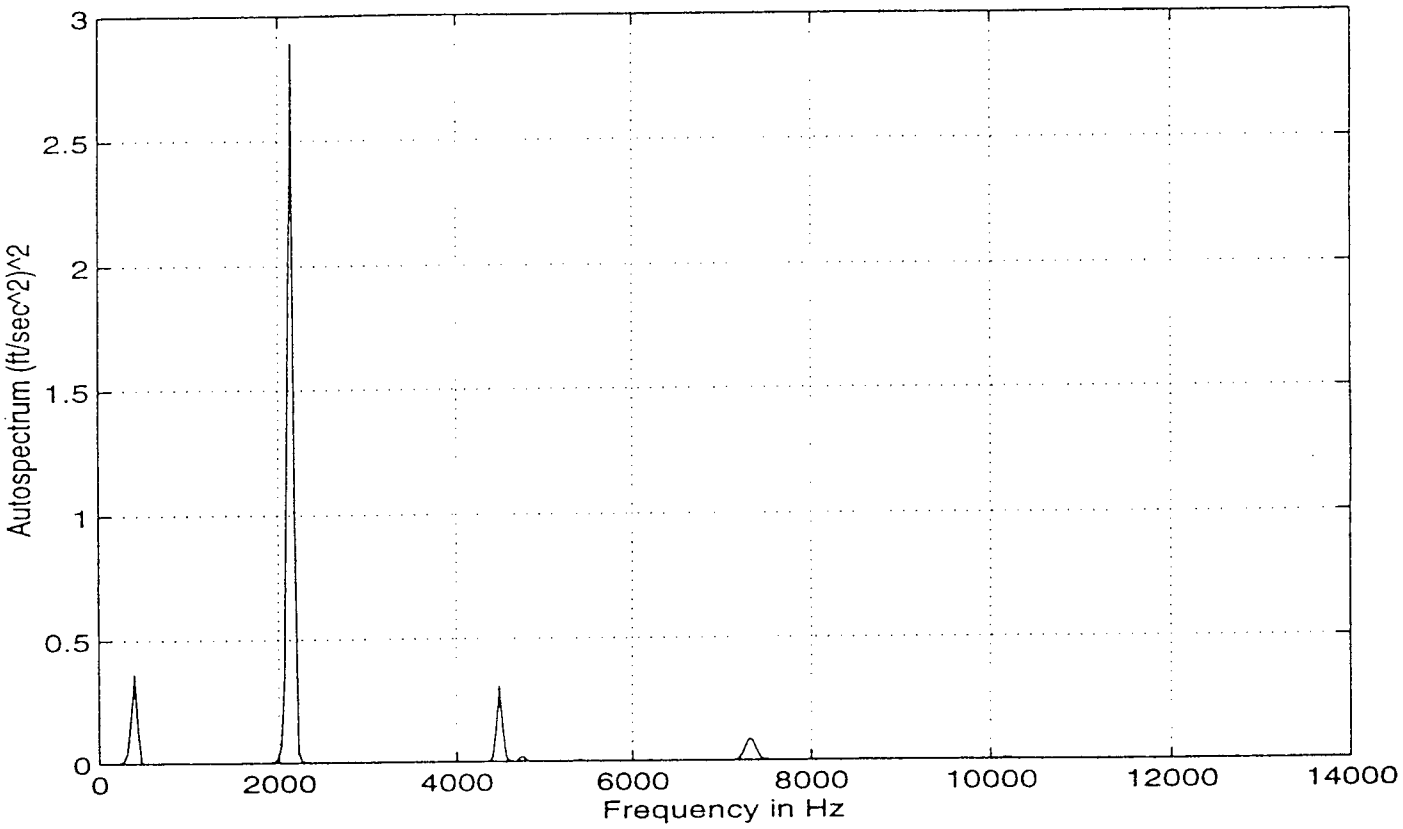

Fig. 2 The distribution of measured frequencies for a concrete beam

The Fig.2a is obtained by using the inverse Fourier's transformation of a selected area around the major peak of the auto-spectrum as shown in Fig.2. Note that the auto-spectrum shown there is a plot of the projections of the recorded acceleration response of the concrete beam, under the impact of the falling weight described above, into the terms of its Fourier's series expansion. The plot of the inverse Fourier's transformation of the selected area from the auto-spectrum shows how the squares of the accelerations changes with time. Therefore, we can measure the amplitudes of the damped free vibrations from period to period directly. Thus, comparing the measured amplitudes from the plot can estimate damping ratios. Results obtained in this manner were presented in the Appendix C. Further discussions on the estimate of damping ratios were reported in the section of [17] with numerical data given on p..27.

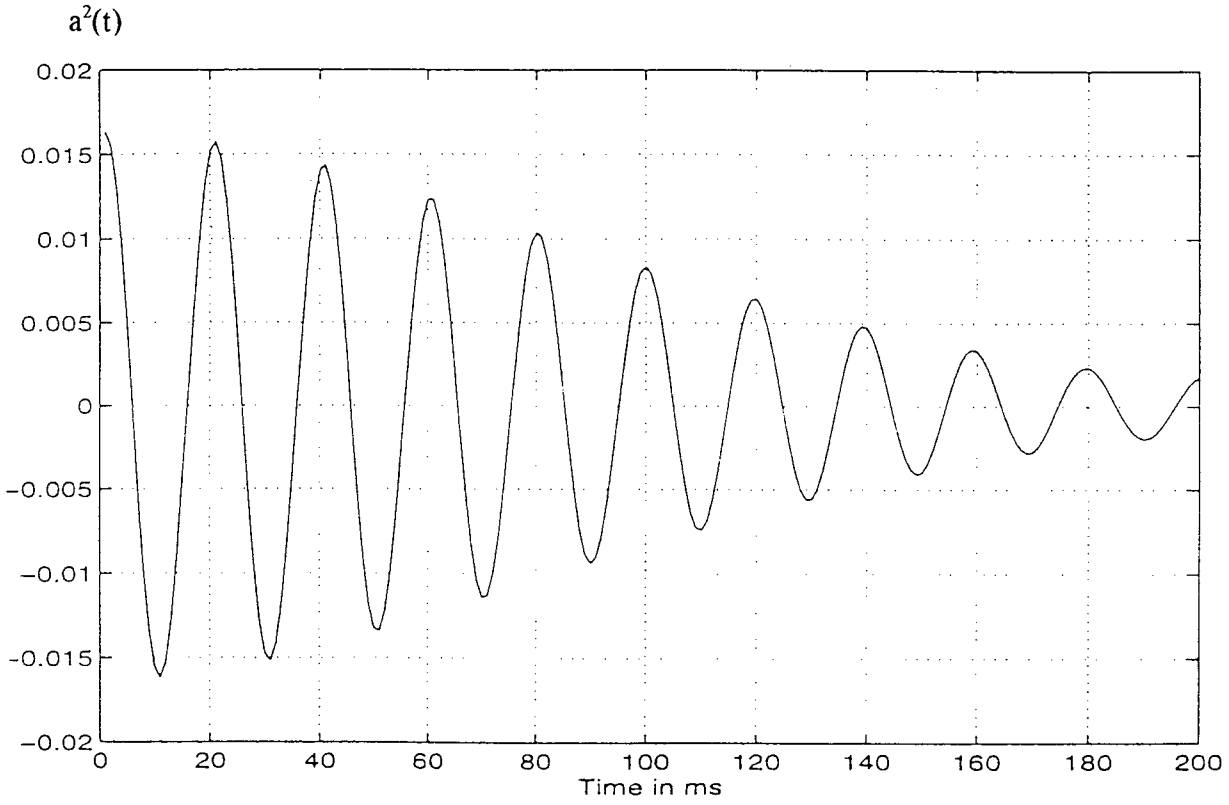

Fig. 2a A Plot of $a^2(t)$, the Inverse Fourier's Transformed of the major peak of the Auto-Spectrum

[11] RAYLEIGH'S QUOTIENT AND SEISMIC ANALYSIS OF STRUCTURES

If only the first mode of transverse vibration is of interest, one can use the dead load deflection of a structure as an approximate shape function for the first mode. Then use it to calculate an approximate natural frequency of the beam, without damping, with the well-known Rayleigh's quotient. It is based on the principle of the conservation of energy that requires that the maximum kinetic energy equal the maximum strain energy of the beam during the vibration, i.e.,

$$\omega^2 = \frac{\int_0^L EI(x)\,[d^2u(x)/(dx^2)]^2\,dx}{\int_0^L \rho A(x)\,u^2(x)\,dx} \qquad (20)$$

Here, ρ is the density of the material, A(x) are the cross sectional area and EI(x) is the flexural stiffness function of the beam. Note that in this method it is insensitive to some minor errors made in the mode shape function assumed, it can always obtain good estimated natural frequency. If we can estimate the modal shape for higher modes quite accurately, then this method can obtain accurate frequencies still.

For seismic analysis, we may apply body forces of the structure, ρ A(x) times an assumed horizontal acceleration in the direction of interest, to the bridge to find the function for the deflection. Substituting the calculated deflections into eqn(20), we can find the natural frequency of the structure for the vibration of interest. Engineers can use it to estimate seismic loads.

However, one cannot, based on the estimated shape functions and frequencies, decide the deterioration of the stiffness of structures. We need to develop more rigorous analysis to meet the needs for bridge rating in the investigation. As discussed early, the shape function for the nth mode of a simply supported uniform beam, span length=ℓ, is u(x)=sin ($n\pi x/\ell$). Substituting this function into eqn(20) yields

$$\omega_n^2 = \frac{EI}{\rho A}\left[\frac{n\pi}{\ell}\right]^4, \quad \text{or} \quad \omega_n = \sqrt{\frac{EIg}{w}}\left[\frac{n\pi}{\ell}\right]^2, \qquad (21)$$

for the angular frequency of the nth mode of vibration. Here w is the weight per unit length and g is the gravitational acceleration with their units consistent to the units of ℓ. Note that when the product of the interval say, Δt, and the angular frequency, say, ω_n, equals 2π, the time duration Δt is the period

of the vibration. Thus, the natural period of the vibration for nth mode, (n=1, 2, 3,....), is

$$T_n = \frac{2\pi}{\omega_n} = \frac{2}{\pi}\sqrt{\frac{w}{EIg}}\left[\frac{\ell}{n}\right]^2 \qquad (22)$$

The period for n=1, for the lowest order of the fundamental modes, the longest natural period, is

$$T_1 = \frac{2\ell^2}{\pi}\sqrt{\frac{w}{EIg}} \qquad (23)$$

For convenience, let the total weight be W=wℓ lbs., the Young's modulus=E psi, the areal moment of inertia=I in^4, and, the length=ℓ ft, the period reads

$$T_n = \frac{24\ell}{\pi n^2}\sqrt{\frac{W\ell}{32.2EI}} \qquad (24)$$

Note that the lowest vibration frequency occurred easily, the corresponding vibration mode dominates the distribution of the cumulative damages induced by the service load to bridge structures. Dr. Niazi's and Hu based on this observation derived a proposed mathematical model to estimate the cumulative damage as presented in the Appendix B.

[12] ON THE SHAPE FUNCTIONS FOR FINITE ELEMENT ANALYSIS

For high order dimensional cases, we can transform the physical domain of an element into a unit square or a unit cube, the tensor products of those can always construct the shape functions for 2-D or 3-D elements derived for one dimensional element [12-13]. Thus, for simplicity, without lost generality, only the derivation of the shape functions for one dimensional element was presented in this report. Engineers frequently use nth order Lagrangian shape functions, researchers in FEM code developments. Hu, Kirmser, Wang and Swartz derived many useful shape functions for finite element methods [14-26]. Among them, such as use a single formula that can be used to generate nth order generalized serendipity shape function, which covers most formulas given in Chapter 7 of the book "The Finite Element Method, written by Zienkiewicz and Cheung[11]. Later derived a nth order complete shape functions. For one dimensional case, it uses nth order polynomial to fit (n+1) nodal displacement parameters of a line element, (in most FEM codes $n \geq 4$) as

$$w(x) = \sum_{i=1}^{j=n} w_i \; S_i(x,\{\vec{x}\}) \;,$$

$$S_i(x,\{\vec{x}\}) = \prod_{j=1,j\neq i}^{j=n} \frac{x - x_j}{x_i - x_j} \qquad (25)$$

Here the vector sign means a list of nodal x_j's. These kinds' elements can produce continuous derivatives within each element domain. The derivatives of solution in the solution domain will be discontinuous at the junctions of elements. Some improved FEM codes use cubic splines, or the third order Hermitian shape functions. It leads to a solution of continuous St. derivative, however, both of the bending moment and shearing function obtained are discontinuous. Thus, for higher order modes, Lagrangian based FEM code cannot determine the frequencies correctly, without using a great number of elements.

To improve the accuracy and computational efficiency for the project, Niazi and Hu uses a set of 5th order Hermitian interpolation functions as the shape functions in their code. This element uses two end nodes only. The nodal parameters selected for this element are:

the nodal displacements,

the nodal slopes, and,

the nodal curvatures.

Therefore, the deflection, slope and bending moment functions, obtained from the FEM code at KSU (using the derived elements stated above) are continuous functions over each structural element between joints. Since more than 90% of the strain energy are due to the bending moments, which lead to accurate simulation naturally. In matrix form, the functions derived are:

$$w(\xi) = [\vec{\Phi}(\xi)]\{\vec{\Delta}\}, \quad \xi = x/L$$

$$\Phi(\xi)] = [\,\phi_0(\xi)\;\; \omega_0(\xi)\;\; K_0(\xi)\;\; \phi_1(\xi)\;\; \omega_1(\xi)\;\; K_1(\xi)\,]$$

$$\{\vec{\Delta}\} = [\,\delta_0\;\; L\theta_0\;\; L^2\kappa_0\;\; \delta_1\;\; L\theta_1\;\; L^2\kappa_1\,]^T$$

$$\begin{bmatrix} \phi_0 \\ \omega_0 \\ K_0 \\ \phi_1 \\ \omega_1 \\ K_1 \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 & -10 & 15 & -6 \\ 0 & 1 & 0 & -6 & 8 & -3 \\ 0 & 0 & 0.5 & -1.5 & 1.5 & -0.5 \\ 0 & 0 & 0 & 10 & -15 & 6 \\ 0 & 0 & 0 & -4 & 7 & -3 \\ 0 & 0 & 0 & 0.5 & -1 & 0.5 \end{bmatrix} \begin{bmatrix} 1 \\ \xi \\ \xi^2 \\ \xi^3 \\ \xi^4 \\ \xi^5 \end{bmatrix}. \qquad (26)$$

Note that here $\xi = x/L$, where

L = the length of an element, the domain of x is $0 \leq x \geq L_i$.

We explain the three sets of shape functions used above as follows:

ϕ_0 and ϕ_1 are for nodal displacements, (δ_0 & δ_1),

ω_0 and ω_1 are for nodal rotations, (θ_0 & θ_1),

K_0 and K_1 are for the nodal curvatures (κ_0 & κ_1).

The subscript 0 or 1 shows the nodal parameter that they relate to ξ=0 or 1, respectively. In Dr. Niazi's dissertation he indexes the nodal parameters and their shape functions sequentially from 1 to 6. The graphic presentations of these functions are given in Fig.4.

Percentage errors of the natural frequencies calculated by code using this method and other FEM code, versus the theoretical solution for Euler-Bernoulli beams, are given in Tables [7.2] to [7.3], (in the Appendix B.). We show the graphic illustration of this in Fig.3.

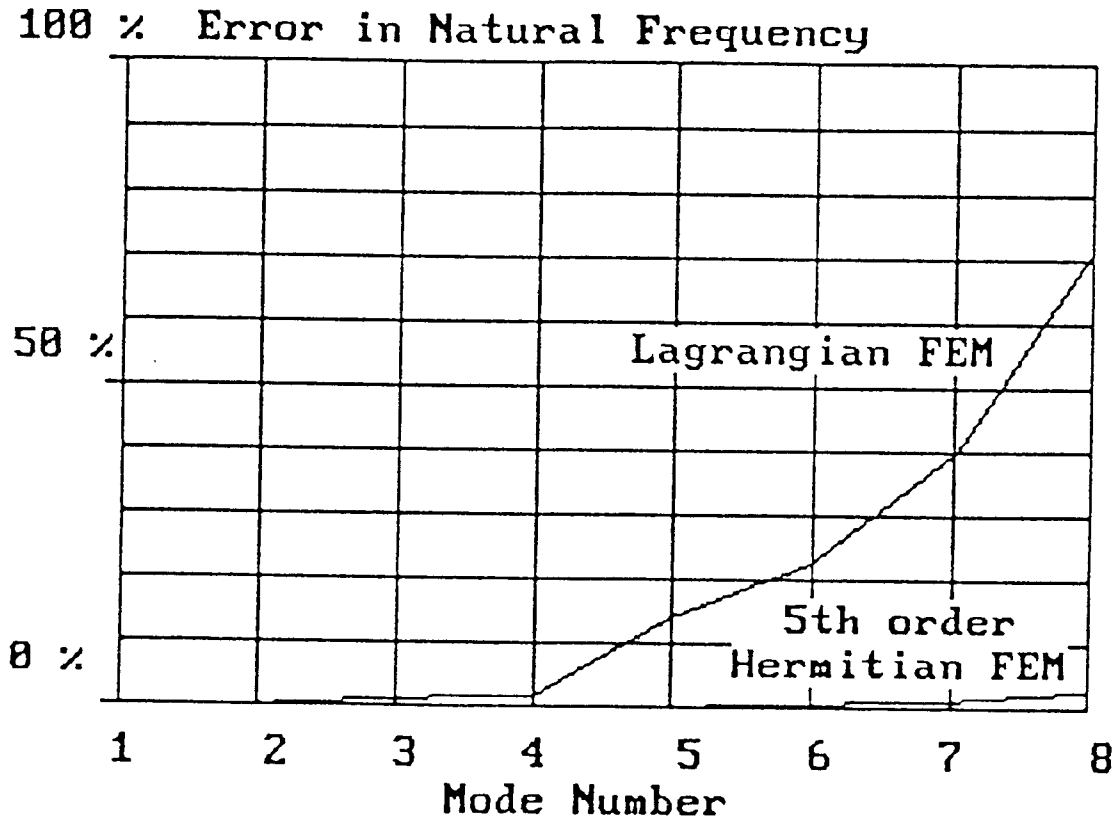

Fig.3 A comparison of errors for the first 6 natural frequencies

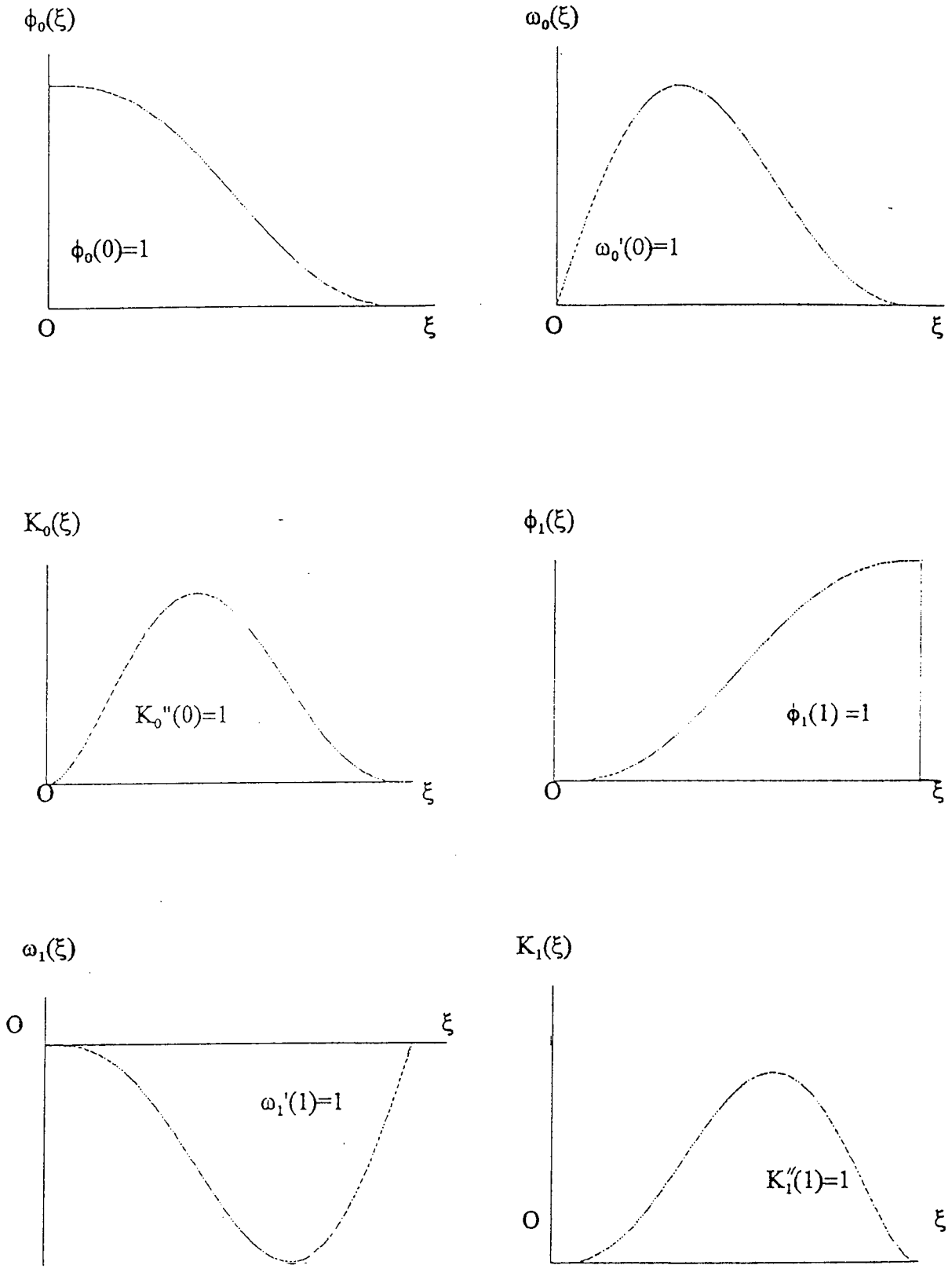

Fig.4 The 5th order Hermitian shape functions

[13] ON THE EULER-BERNOULLI BEAM AND TIMOSHENKO BEAM THEORIES

For static analysis, Euler-Bernoulli beams ignore the sheared deformation completely but Timoshenko beams consider the sheared deformations.

In the dynamic analysis of beam structures, the equation, for Euler-Bernoulli beams, ignores both the rotary inertia and the shear deformations. Thus, the equation characterized the motion of forced lateral vibrations is

$$m(x)\frac{\partial^2 u}{\partial t^2} + \frac{\partial^2}{\partial x^2}\left[EI(x)\frac{\partial^2 u}{\partial x^2}\right] = P(x,t) \qquad (27)$$

The equations for the dynamic analysis of Timoshenko beams include the additional effects due to rotary inertia and the shear deformations. Thus, if let the total deflection be v(x) and the function of sectional rotation be β(x), the shear deformation reads

$$\gamma = \frac{\partial v}{\partial x} - \beta \qquad (28)$$

Let

$$\begin{aligned} \kappa &= \text{shape factor for shear deform} \\ A(x) &= \text{cross sectional area} \\ G &= \text{the modulus of rigidity,} \\ I(x) &= \text{Cross sectional moment of ine} \\ \rho &= \text{density of the material} \end{aligned} \qquad (29)$$

The following simultaneous partial differential equations characterize the transverse motion of Timoshenko beams

$$\frac{\partial}{\partial x}\left[\frac{GA}{\kappa}\left[\beta - \frac{\partial v}{\partial x}\right]\right] + \rho A\frac{\partial^2 v}{\partial t^2} = p(x,t)$$

$$-\frac{\partial}{\partial x}\left[EI\frac{\partial \beta}{\partial x}\right] + \frac{GA}{\kappa}\left[\beta - \frac{\partial v}{\partial x}\right] + \rho I\frac{\partial^2 \beta}{\partial t^2} = 0 \qquad (30)$$

$A = A(x)$, $I = I(x)$,

and

$\beta = \beta(x)\cos\omega t$, $v = v(x)\cos\omega t$.

Note that the last term in the second equation of eqn(30) is due to the consideration of the rotary inertia. If we ignore it, the truncated system of partial differential equations characterizes the shear beams. More discussions on this will be presented in the next section.

[14] FROM SHEAR BEAMS TO TIMOSHENKO BEAMS

When we ignore the rotary inertia, the systems of equations for shear beams reads

$$\frac{\partial}{\partial x}\left[\frac{GA}{\kappa}\left[\beta - \frac{\partial v}{\partial x}\right]\right] + \rho A(x)\frac{\partial^2 v}{\partial t^2} = p(x,t)$$
$$-\frac{\partial}{\partial x}\left[EI(x)\frac{\partial \beta}{\partial x}\right] + \frac{GA(x)}{\kappa}\left[\beta - \frac{\partial v}{\partial x}\right] = 0 \qquad (31)$$

If the expressions to characterize the variations of the following ratios

$$r(x) = \frac{\kappa E I(x)}{GA(x)} = r_0 + r_1 x + r_2 x^2,$$
and
$$g(x) = \frac{\kappa E}{GA(x)}\frac{dI(x)}{dx} = g_0 + g_1 x \qquad (32)$$

are satisfied, which implies that we can solve the coefficients of the polynomial for $\beta(x)$ in terms of those of v(x). i.e., the nodal parameters of v(x) can be used to expressed $\beta(x)$. We reported the detailed derivation and its results in the section 3.2.4., pp. 50-54 of the Appendix B. Note that the derived result is applicable to simulate the vibration of beams with variable cross sections. If we want high accuracy, then the shear beam analysis will provide approximate frequency for each mode. For the analysis of free vibrations, the last term in the 2nd equation for Timoshenko beams, eqn(30), can be replaced by $-\omega_i^2 \rho I(x) \beta(x)$. This partial differential equation has the following reduced form:

$$\frac{\partial v}{\partial x} = -\frac{\kappa}{GA}\frac{\partial}{\partial x}\left[EI(x)\frac{\partial \beta}{\partial x}\right] + \left[1 - \rho\omega_i^2 \frac{\kappa I(x)}{GA}\right]\beta . \qquad (33)$$

In this equation the ω_i is obtained for the ith mode of the shear beams. Thus, using the expressions given in eqn(32), eqn(33) becomes

$$\frac{\partial v}{\partial x} = \left[1 - \rho\omega_i^2 \frac{\bar{r}}{E}\right]\beta - g(x)\frac{d\beta}{dx} - r(x)\frac{d^2\beta}{dx^2} . \qquad (34)$$

Here, in the 2nd term, the average value of r(x)/E for each element was used. We can use this expression to derive a set of new shape functions, (in terms of ω_i^2), to improve the modal analysis of Timoshenko beams iteratively. We cannot ignore the influence of ω_i^2 on the shape functions for the higher modes. It is worth to mention that the shape functions derived from shear beams have been misused for solving Timoshenko beams (i.e., ignored the effects of rotary inertia for deriving shape functions but to include the rotary inertia in the calculation of a mass matrix) with false claim as correct solutions should be corrected.

[15] NUMERICAL SIMULATION OF DYNAMIC RESPONSES–THE DR10 PACKAGE

The literature review reported various methodologies for numerical simulation of dynamic responses. We can view Dr. Niazi's dissertation as a state-of-the-art report. The FEM code (DR10 Computer Program Package) developed used a combination of effective methods to simulate the motion of structures under the application of moving loads. We summarize them as follows:

- *Preprocessor*

  We developed an efficient preprocessor that reads the data file of the structure and used in the following step to generate the required system of equation for simulation.

- *For the consideration of shear effects:*

  We include a set of formulas for calculating the shape factor for various sections. (No effects due to shear lags were considered in the development.)

- *Completing the Computations for [M], [C] and [K] matrices:*

  The mass matrix and [K] matrices were calculated using the derived shape functions for FEM, it includes:

  i) It uses 5th order Hermitian shape functions.

  ii) The derivation includes the relationships between the total deflection, sectional rotations and shears strain for shear beams. i.e., we completely excluded the effects induced by rotary inertia.

  iii) The [C] matrix was calculated using the estimated damping ratio from the data file.

- *Free Vibration Analysis*

  i) The Householder's tri-diagonalization technique was used twice. It tri-diagonalizes the mass matrix [M] and the transformed stiffness $[K'] = [\psi_m]^T [K] [\psi_m]$.

  ii) Systematic rotational transformations, a modified Jacobean method, (without a search for the maximum off diagonal element for elimination, called QR-method,

were used twice. It diagonalizes the tri-diagonalized mass and transformed stiffness matrices for the eigen values and eigen matrices to complete the solution for the free vibration analysis without considering damping.

iii) Using the estimated damping ratio to include the effects of damping for the vibration analysis of bridge structures.

- *Simulating the dynamic responses of bridge structures*

  i) An analyzer, was developed, which uses a modified method of Newmark to integrate the linear partial differential equations. It uses an optimized numerical damping to avoid over shoot for better stability.

  ii) Save the time history of dynamic responses of the following cases:

  a) User selected section, (the optional case is the mid-point of the bridge.

  b) The responses of contact points of a moving load, e.g., the contact point of the last wheel and the slab.

- *Post Processor*

  Subroutines which display the calculated results of free vibrations, forced vibrations were developed to display the simulated motion of the structure.

We reported both the theoretical derivations and their practical application of the development in detail in the Appendix B. e.g., some concise explanations of FEM program package and simulated results, dynamic responses of free vibrations for tapered beams, beam with various notches simulated by the developed FEM code were compared with the theoretical and experimental data with good agreements [3-5].

[16] SIMULATING DYNAMIC RESPONSES OF BRIDGES TO IMPACT LOADS

Using the general methodologies described above, in section [14], was used to simulate the motion of the bridge under the application of an impact load. An example that shows the simulated transverse displacements, velocities and acceleration of the free end of a cantilever beam under the application of an impact mass load, drop on the beam at the free end, were illustrated by plots of the recorded screen display, (For detail, see Appendix B, pp.115-116).

We have tested the free vibration of a cantilever steel beam of 2" x 0.375" x 30" with a given initial displacement of .5" at the free end. The LabVIEW system recorded the response acceleration of this test. Both of the recorded and simulated, (by DR10), we reported results below. Note that the natural frequency of the measured result is less than the simulated one. This discrepancy mainly is due

to the clamping device is not rigid enough to enforce the satisfaction of non rotation condition at the clamped end.

[17] SIMULATING DYNAMIC RESPONSES OF BRIDGES TO MOVING LOADS

We simulated and reported the dynamic displacements, velocities and accelerations of the midpoint of the bridge, and those responses for the selected contact points (such as the last wheel on the bridge), induced by a sequence of moving loads traveling on a three-span-continuous girder, in chapter 7 in the Appendix B. The simulated responses of a series of moving forces applied to a 3-span, continuous, girder was presented here. The quality of the simulation agrees to engineering judgement. Thus the computer program DR10 developed at KSU is applicable if moving forces can approximate the moving vehicle.

However, the results for the dynamic responses, induced by a moving mass system of the same amplitude and applied on the same structure as used in the early simulation, calculated acceleration responses were higher than those of the moving forces. Up to now, no mistakes, in the derivation or in the computer program could be found. Thus, more research work are needed to simulate the dynamic responses of bridge structures to some specified moving mass systems.

[18] ON THE DETERMINATION OF DAMPING RATIO FROM EXPERIMENTAL DATA

Two different methods to estimate damping ratios were reported and used by Mr. Iyer in the Appendix C:

a) by the use of an assumed factitious frequency-amplitude responses, (or the resonant amplitude method),

b) determine the damping ratio by using the logarithmic decrement of the adjacent amplitudes of a plot. It is the inverse Fourier transformation that transforms a selected area around the resonant frequency of the auto-spectrum.

It is the author's opinion, the curve of a frequency-amplitude response curve is a plot of a set of amplitudes of the structure versus the frequencies, when harmonic forces

$$p(t) = p_o \sin \omega t \qquad (35)$$

with various frequencies exciting it. The auto-spectrum is a plot of the projection of the time history

plot of the response accelerations of the selected point of the structure, (recorded by the LabVIEW), onto the Fourier's series expansion. This is a transformation that transforms the accelerations-time function from the time domain to a frequency domain. It is not clear that they can treat a plot of an auto-spectrum as a plot of amplitude-frequency curve. Note that a set of harmonic excitations of the form $p_o \cos \omega t$ generate the amplitude-frequency curve. In which the magnitude of the force, p_o, is a constant but with some varying ω to generate a bell-shaped plot of response amplitudes. Thus, the validity of the plausible approach proposed by Iyer, which assumes that in the half-power point band width the amplitudes of the function, (which they obtain from Fourier's transformation of the time history of the acceleration response curve), are uniform is questionable. To show the validity of the assumption, they need either to provide with more evidence or to give a more rigorous theoretical proof. The 2nd approach suggested by K.K.Hu and accepted by Mr. Iyer as an alternative method, which based on the solution of a damped system.

$$u_c(t) = e^{-\xi \omega t} \left(A \cos \omega_D t + B \sin \omega_D t \right)$$

with

$$\omega_D = \omega \sqrt{1 - \xi^2}, \qquad (36)$$

and

$$\xi = \frac{c}{2 m \omega} = \frac{c}{2 \sqrt{k m}} .$$

which uses the assumption that the damping of a structure can be described by viscous damping. The values of the damping ratios, for plain concrete beams loaded by fatigue loads at various number of cycles, obtained by the use these methods, were given below.

A Comparison of Damping Ratios Calculated by Different Methods

Number of fatigue load cycles	Damping Ratios Calculated by Using The Inverse Fouriers Transformation.	Damping Ratios Treats the Autospectrum plot as Amplitude Responses to excitations of p cos $\omega_i t$	Percentage Errors
0	1.75%	1.74%	- 0.6%
500	1.29%	1.14%	- 11.6%
1,000	1.08%	1.01%	- 6.5%
1,500	1.30%	2.30%	88.5%
2,100	1.75%	2.43%	38.8%
2,800	1.83%	2.84%	55.2%

[19] A MATHEMATICAL MODEL FOR CUMULATIVE DAMAGE

It is well known that the number of cycles to cause the fatigue of a material depends on the mean stress level and the level of stress frustration. For bridge structures, the mean stress level at any point is the stress induced by the dead load of the bridge. The levels of frustrating stresses can be estimated by the amplitudes of oscillation of the structure excited by moving loads of various vehicle types. Such as the cars, busses and trucks. The average volume of each type in each state can be estimated by the statistics made by the State's Department of Transportation. According to N. Willems, J.L. Easley and S.T. Rolfe, in their "Strength of Materials" book, it stated that:

> One of the most widely used approaches is Miner's cumulative-damage law. In this approach, the assumption is made that the "damage" {i.e., loss of fatigue life) of a member at any stress level is additive, such that

$$\sum_{i=1}^{i=k} \frac{n_i}{N_i} = 1 \qquad (37)$$

Where k = number of different stress levels in a particular loading sequence

i = the ith loading level in that loading sequence

n_i = number of cycles of loading at a stress level σ_i

N_i = Fatigue life at a stress level of σ_i.

The use of this Miner's cumulative-damage law can estimate the damage at any point of interest. i.e., we can use it to calculate the reduced modulus of elasticity at any point in a structure. This methodology was described in the Section 6.3 in the Appendix B, and, It is summarized as follows.

Note that, corresponding to each vehicle type, the maximum bending moment (say, $M_{max,i}$) can be determined by standard structural analysis. Therefore, the stress level at any point, $\sigma_i(x, y, z)$, can be estimated by the use of lowest mode shape function of free vibration of the structure, i.e.,

$$\sigma_i(x,y,z) = \left[\frac{s_{j(z)}\, y}{I_{j(z)}(x)}\, M_{max,i}\right] \times \left[\frac{E\, I(x)\; d^2\phi_1(x)/dx^2}{[\sum_{j=1}^{j=m} E\, I(x)\; d^2\phi_1(x)/dx^2]\,|_{max}}\right],$$

and

$$\tau_i(x,y,z) = \left[\frac{s_{j(z)} Q_{j(z)}(x,y)}{t(x,y,z)\; I_{jz)(x)}}\, V_{max,i}\right] \times \left[\frac{E\, I_{j(z)}(x)\; d^3\phi_1(x)/dx^3}{[\sum_{j=1}^{j=m} E\, I_{j(z)}(x)\; d^3\phi_1(x)/dx^3]\,|_{max}}\right]. \quad (38)$$

Here subscript j corresponding to the jth girder of the bridge, in which the point of interest can be located, and s_j is the load carrying factor for the jth girder. i.e., the portion of the load W_i to be carried by the jth girder is

$$W_{j,i} = s_j\, W_i\,. \quad (39)$$

Note that the summation of the s_j , over j=1, 2, ..., m, could be greater than one. If the failure mechanism is characterized by the principal stresses and the maximum shearing stresses, we can estimate the maximum/or minimum principal stresses at each point by:

$$\tau_1(x,y)_{j,i} = \tau_{max.\ in\text{-}plane}\,|_{j,i} = \sqrt{\tau^2{}_{j,i}(x,y)}$$

$$\sigma_{max}(x,y)\,|_{j,i} = \frac{\sigma_{j,i}(x,y)}{2} + \tau_1(x,y)_{j,i}\,, \quad (40)$$

$$\sigma_{min}(x,y)\,|_{j,i} = \frac{\sigma_{j,i}(x,y)}{2} + \tau_1(x,y)_{j,i}\,.$$

The maximum shearing stresses can be determined by

$$\tau_{max}(x,y)_{j,i} \begin{cases} = \tau_1(x,y)_{j,i}, \\ \text{if } [\sigma_{min}\,\sigma_{max}]_{j,i} < 0\ ; \\ = \dfrac{|\,\sigma_{max}(x,y)_{j,i}\,|}{2}, \\ \text{if } [\sigma_{min}\,\sigma_{max}]_{j,i} > 0\ . \end{cases} \tag{41}$$

Then one can use these results to determine the life cycle, $N(x, y)_{j,i}$, and the ratio of $n_i/N(x, y)_{j,i}$ for each point of interest. Recognizing the deterioration of the value of E induced by service load is characterized number of cycles and it changes slowly in the beginning and the speed of deterioration increases with the growth of the cumulative damage (or the age) of the structure. This observation leads Niazi and Hu to have a formula, as proposed in the appendix B which is listed here

$$E[x,y,z]_{yr.} = E_o \sin\left(\sum_{i=1}^{k} \frac{n_i(yr.)}{N(x,y,z)_i}\right) \tag{42}$$

to characterize the relationship between the damaged E and the cumulative damage induced by fatigue. Thus, the reduced flexural stiffness over any section can be estimated.

$$E\,I_j(x)\,|_{yr} = \int_{y\text{-}bottom}^{y\text{-}top} y^2\,[E_j(x,y)]_{yr}\,b(y)\,dy \tag{43}$$

With the curve of $(EI)_{reduced}$ for each beam determined by eqn(43), the stiffness of each element can be calculated according to the methodology reported in the Appendix B.

Note that it is possible to introduce more parameters to make the mathematical model to deviate less from the field data. e.g., one may use the following form for a more realistic mathematical expression to model the reduced modulus of elasticity.

$$E[x,y,z]_{yr.} = E_o \cos^p\left[\frac{\pi}{2}\left[\sum_{i=1}^{k} \frac{n_i(yr.)}{N(x,y,z)_i}\right]^q\right] \tag{44}$$

Here, p and q are positive real numbers. Note that the reduction rate of E is almost proportional to the power p. While q can stretch or shrink the cumulative damage ratio to fit into the normalized interval $\pi/2$. Thus, with field data available, these two parameters can be determined by the use of least squared method, (which minimizes the average norm), or by the method of mini-max, (which

minimizes the maximum error), method. This requires more cooperation between research group and field engineers and designers to work on the model to make it to be useful. As for the determination of the life cycle for general state of stresses, based on the available S-N curves, is proposed and discussed in the next section. To ensure that one can estimate the life cycle $N_{j,i}$ for more general state of stresses, an additional methodology is developed and presented the next section.

[20] USING A GENERALIZED FAILURE THEORY TO PREDICT FATIGUE LIFE

An acceptable formula which can be used to predict the fatigue life for complicated stress states should be applicable to simple test cases. It should have its logical reasons that were developed by the use of engineering principles. For this, we assume that the damage of a specimen under the application of fatigue loads is closely related to the functional for indicating the failure of materials. The author trust that the following functional can be useful in this direction.

This functional was developed for finding the level surface in the space of principal stresses, and is called a generalized failure theory for materials. Developed by Hu and Swartz [13,14] in the late of 70th, it uses an interactive functional to calculate the level of failure of a material, (or the failure index), according to a given state of stresses. When the state of stresses approaches to failure, the functional, F, approaches to one. Let

$$e^{Y}_{t} = \frac{\sigma^{Y}_{t}}{E} > 0, \quad \text{and} \quad e^{Y}_{c} = \frac{\sigma^{Y}_{c}}{E} < 0, \qquad \sigma_3 < \sigma_2 < \sigma_1, \quad \text{and} \quad I_1 = \sigma_1 + \sigma_2 + \sigma_3, \tag{45}$$

The function reads

$$F = \alpha \frac{(\sigma_1 - \sigma_2)^2 + (\sigma_2 - \sigma_3)^2 + (\sigma_3 - \sigma_1)^2}{(\sigma^{Y}_{t})^2 + [(\sigma^{Y}_{c})^2 - (\sigma^{Y}_{t})^2] \dfrac{I_1 - \sigma^{Y}_{t}}{\sigma^{Y}_{c} - \sigma^{Y}_{t}}} + \frac{1 - \alpha}{E} \frac{\sigma_1 - \nu\sigma_2 - \nu\sigma_3}{e^{Y}_{t} + [-\nu e^{Y}_{c} - e^{Y}_{t}] \dfrac{I_1 - \sigma^{Y}_{t}}{\sigma^{Y}_{c} - \sigma^{Y}}} \tag{46}$$

It is a generalization of the Von Misses' and Mohr's failure theories. Thus, it is applicable to both brittle and ductile materials. This generalization improved the Von Misses' theory so that the yield

of material can be predicted even for the special case when $\sigma_1 = \sigma_2 = \sigma_3$. Here, the superscript y indicates that the state of stress reaches a level of yield or failure. σ^y uses the subscript "c" to referring it is a compressive, $\sigma_c < 0$, failure stress. It uses "t" to show that it is the tensile, $\sigma_t > 0$, failure stress. Normal σ uses subscript 1, 2 or 3 to show that it is the 1st, 2nd or 3rd principal stress. The symbol I_1 stands for the first invariant of the stress matrix. i.e., $I_1 = \sigma_1 + \sigma_2 + \sigma_3$. The parameter α is a material constant which is related to its ductility. For perfect ductile materials, the α approaches to one, and, its value approaches to zero for completely brittle materials. Therefore, the principal stresses at any point in a structure can be determined by the stress components calculated according to eqn(38). Thus the failure-index for any point, under the application of W_i, can be calculated according to eqn(46). The failure surfaces for concrete, in the space of principal stresses is shown in Fig.5.

Note that the cycle number $N_i(\sigma_i)$ is determined by fatigue tests with the maximum applied or fluctuation stress level of σ_i. For each σ_i one can use eqn(46) to find the failure-index $F(\sigma_i)$. We assume that the cumulative damage of a material is proportional to the failure-index. i.e., identical specimens will have the same life cycle if they have the same failure-index even if the states of stresses are different. Thus, one can convert the N-S curves into a set of N-F curves. This means that the life cycle N_i is some function of the failure-index F_i, or $N_i = N(\sigma_1 , \sigma_2 , \sigma_3)$. Therefore, by using the methodology proposed here, we can use the existing S-N curves to predict the life cycle for complicated state of stresses.

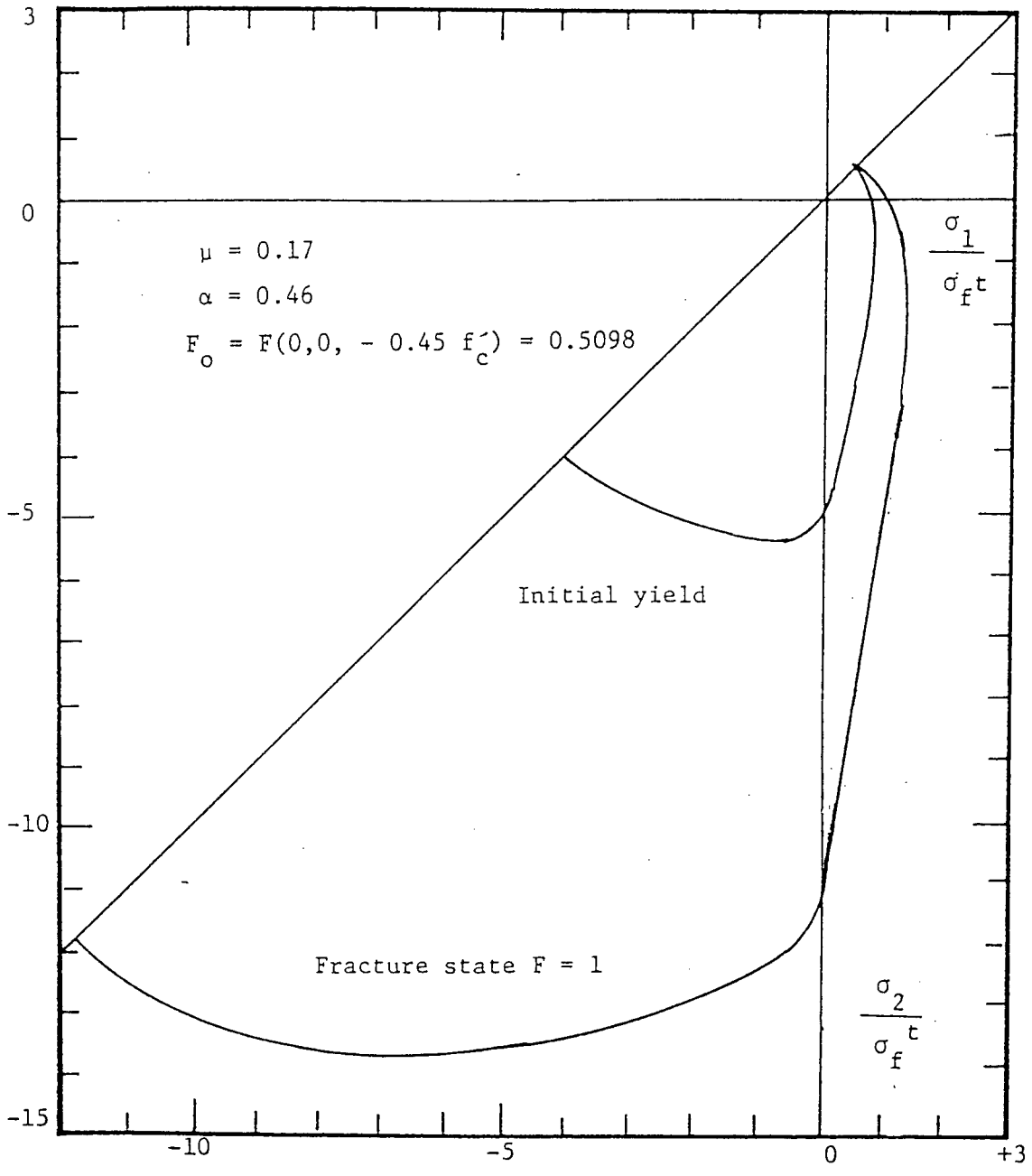

Fig. 5 An Application of the Generalized Failure Theory to Concrete

[21] CONCLUDING REMARKS

The major results obtained through the investigations were summarized above. The important findings were highlighted below:

- The-state-of-the-art of practical systems such as the instrumentations, computer hardware and software and data acquisition system were identified and used for the project.
- Physical models: plain concrete beams and micro reinforced concrete beams were tested to find the changes of dynamic responses due to fatigue loads.

They observed the following conclusions

a) The natural frequency and damping ratio change with the increasing number of fatigue load cycles.

b) However, the changes of frequencies and damping ratios become inconsistent to the early measurements when the life cycle number is near the failure cycle
The reason to cause these kinds of phenomena requires further investigations.

c) The change of the amplitude of the lowest mode showed a monotonic decreasing with the increasing number of fatigue cycles and the area around the lowest peak was identified to be a practical parameter to be used for determining an index of damage (or performance) of bridges.

- Numerical simulation methods were reviewed and completed the development of a computer code DR10 to simulate continuous framed structures.

They observed the following conclusions:

d) When compared the results obtained by the current code to those using Lagrangian based code, convincing evidence showed that the use of 5th order Hermitian shape function is very efficient for higher accuracy for simulating free and forced vibrations of beams and rigid framed bridge structures.

e) The numerical technique developed is very effective for simulating dynamic responses of bridge structures to moving forces.

f) Further investigation and developments were needed:

(1) To simulate the dynamic responses of structures to systems of moving mass loads.

(2) To implement the methodology developed for simulating girder bridge having variable sectional dimensions other than linear varying functions.

g) To use the dynamic responses of structures to impact loads, such as FWD require adequate transducers to measure sensible responses.

h) Cost-effective methods other than falling weight are needed and worthy of further research and development.

i) In order to identify the location and the damage type, unfolding software for backward manipulation to identify the elastic properties of structural elements is needed.

j) The development of the unfolding software, (identified in the item I) and further development for inexpensive instrumentations(by professors K.K.Hu, P.G.Kirmser and H.S Walker at KSU), could provide effective tool for bridge rating.

- Methodology in predicting the cumulative damage and the deterioration of the modulus of elasticity was developed.

  They observed that:

  k) The methodology developed for estimating the cumulative damage is practical.

  l) The mathematical formulas for estimating the reduced modulus of elasticity is simple and effective. It is ready for calibration.

  m) The application of the generalized failure theory for material to estimate the fatigue life for general stresses, as reported, is worth to be verified by experimental data.

- They felt that KTRAN program has its unique contribution to the State of Kansas

  n) Some joint efforts among the KDOT, KTEC, universities and the private companies can accelerate the development of the desired devices and systems for effective rating bridge system to build better highway system to serve the State of Kansas. It can even enhance the economy of Kansas.

  o) The KTRAN project is one of the most productive programs in engineering research. It benefits in every direction: identify technical problems, finding effective solution, improve efficiency, provide better service and enhance the productivity of KDOT and The CE department at KSU.

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STAKEHOLDERS REVISIT HEALTHY PEOPLE 2000 TO MAXIMIZE THE IMPACT FOR 2010

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The objectives articulated in Healthy People 2000 attempt to improve the health of Americans through effective prevention strategies. They form a model framework for results-oriented performance measurement that can be made relevant to both population-based and individual health care initiatives. They also serve as a benchmark against which performance across the nation can be measured over time. The development of Healthy People 2010 provides an opportunity to consider the successes and failures of Healthy People 2000 in achieving these important goals. Based on experience with Healthy People 2000 and major changes since 1990 in the nation's health and health care, this report explores new approaches for the development of Healthy People 2010. In developing these new approaches, the perspectives of the Healthy People Steering Committee and the Healthy People Consortium, made up of 330 member organizations were sought. Through interviews with key Steering Committee members, a retreat for the entire Steering Committee, and 7 focus groups of Consortium members, clear themes and suggestions emerged. The report finds that both Steering Committee and Consortium members valued Healthy People 2000 as a forum for public health concerns and issues. However, both groups had several suggestions for the next version. For example: (1) most members of the Steering Committee thought that the document should be reduced in size; (2) Steering Committee members were more interested than Consortium members in making major changes to the document; (3) Consortium members proposed many changes to improve the effectiveness of the document as a tool for communicating with a wide range of professionals and community leaders; and (4) health care purchasers and managed care plans thought that there should be fewer priorities and objectives in order to focus on a limited number of problems. The final report is available on the Internet at: http://web.healthy.gov/healthypeople.

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Institute for Health Policy Outcomes and Human Values
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STAKEHOLDERS REVISIT HEALTHY PEOPLE 2000 TO MAXIMIZE THE IMPACT FOR 2010

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Executive Summary

The Health Objectives for the Nation articulated in Healthy People 2000 serve as a critical foundation in setting a vision for improving the health of Americans through effective prevention. They guide decisions and mobilize actions by hundreds of organizations and individuals in the public and private sector, at the national, State and local levels.

Healthy People represents a model framework for results-oriented performance measurement, one that can be made relevant to both population and personal health care services. The Healthy People objectives draw attention to priority needs and problems. They also serve as a "benchmark" or standard of comparison that can be used to assess performance across the nation and progress over time. They highlight the contributions that can be made, indeed must be made, by a wide range of partners, both public and private, in order to improve the health of Americans. Finally, they embody the enduring commitment of public health to address the needs of those with the greatest need and the most constrained resources.

The development of Healthy People 2010 provides an opportunity to reflect on the successes and shortcomings of Healthy People 2000 in achieving these important functions. Based on experiences with the document, as well as major changes since 1990 in the nation's health and health care, a new approach to the construction and dissemination of the 2010 document may help it better serve the needs of the people of the United States. As a way to review the performance of the 2000 document, and to explore new approaches for Healthy People 2010, the United States Office of Disease Prevention and Health Promotion (ODPHP) sought to query the Healthy People Steering Committee, made up of senior staff from government health agencies, as well as the Healthy People Consortium, made up of 330 member organizations, representing the professional, voluntary, and corporate sectors, as well as State and Territorial health departments.

To gather the perspectives and opinions of these large groups of people and organizations most involved with Healthy People 2000, ODPHP enlisted the help of the Center for Health Outcomes Improvement Research (CHOIR) of the George Washington University Medical Center. By interviewing key Steering Committee members, holding an all-day retreat for the Healthy People 2000 Steering Committee, and conducting a series of seven focus groups of Healthy People Consortium members, CHOIR gathered more than forty hours of material from key stakeholders of the Healthy People 2000 program.

Clear themes and suggestions emerged from the analysis of the material. One message must be emphasized: both Consortium members and Steering Committee members were unanimous in valuing the Healthy People 2000 document as a "voice" for public health. The value of the document was not debated, only the extent and nature of revisions to be made for the next version.

Most members of the Steering Committee thought the document should be reduced in size, although there were some members opposed to the idea of changing anything about the

document because of its effect on the Consortium members' activities. Opinions were voiced at the Retreat that the document should be shortened to assist the States in setting priorities; opposing views were that the document should be kept the same or made larger in order to help the States by providing objectives across a wider range of public health concerns. Several Steering Committee members thought the document should be changed either very little or not at all in order to ensure continuity. In general, Steering Committee members were more interested than Consortium members in making major changes to the document.

Consortium members, in general, liked the document the way it was, and did not think it should be shortened or restructured. However, Consortium members proposed many changes to improve the effectiveness of the document as a tool for communicating with a wide range of professionals and community leaders. There were some differences in Consortium members with different roles. In general, representatives from State health departments liked the document as a compendium from which to choose priorities and association members liked the level of detail for the objectives most closely linked to their mission.

An exception to the overall views of Consortium members were those voiced in a focus group specially designed to hear the views of stakeholders that are newly emerging as critical actors in health and health care: health care purchasers and managed care plans. These groups identified the need to have fewer priorities and objectives in order to focus greater attention and resources on a limited number of important problems, and to form partnerships to pursue those priorities.

Although most Consortium members did not want major changes in the structure and content of the document, they did want creative changes in its presentation-- taking advantage of new information and communication technology to create not only a single "reference" document but a flexible "database" that would permit multiple versions of the document to be produced that would be adapted to the needs of a wide range of audiences with different interests and needs. Many Consortium members also noted that to get support for public health objectives from outside the profession, it was critical to create a document written in a language, and organized in a manner, that would be more appropriate for a wide range of professional and community audiences rather than one geared primarily to the public health community.

Consortium members, in general, did not consider the organization or framework of Healthy People to be very important. When asked, however, people on the Steering Committee and Consortium members liked "life stages" as a conceptual way to organize the document. The rationale, as they said, was that this organizing principle would make Healthy People "more about people instead of health departments."

Consortium members did not consider the number and organization of priority areas to be very important either but they did focus on the three overarching goals of Healthy People which in the Year 2000 version have been to: (1)Increase the span of healthy life for Americans; (2)Reduce health disparities among Americans; and (3)Achieve access to

preventive services for all Americans. With three goals, 22 priority areas and 300 objectives, many felt the goals get lost.

Members suggested additional goals and objectives such as a goal for healthy environments and objectives for public health infrastructure. Some thought the first goal should be changed to "increase years of quality life." This focus on functional status rather than mortality was echoed by employer/purchasers' concerns about having morbidity rather than mortality statistics because they are more relevant to the healthy worker.

Most participants agreed on the need for Healthy People 2010 to be relevant to purchasers and the private sector. Participants also voiced the need for outcomes and performance data to make the case for prevention. Consortium members also wanted the Healthy People objectives to be supplemented by information about strategies for achieving objectives and about interventions that work in other communities.

All those who participated in discussions were enthusiastic about the opportunity to use Healthy People 2010 to reach a wider audience and to use it to form partnerships to improve the health of the nation.

Chapter 1. Introduction and Background

Introduction

In planning for Healthy People 2010, the United States Office of Disease Prevention and Health Promotion (ODPHP) enlisted the help of the Center for Health Outcomes Improvement Research (CHOIR) of the George Washington University Medical Center to gather the perspectives and opinions of Healthy People Steering Committee and Consortium members. This report is the result of gathering data from these groups. A total of more than forty hours of information was obtained from meetings and focus group discussions with Healthy People Steering Committee members and with Healthy People Consortium members. Clear themes and creative suggestions emerged to guide the development of the new version of Healthy People.

Background

The Health Objectives for the Nation articulated over the years in "Healthy People" documents serve as a critical foundation in setting a vision for improving the health of Americans through effective prevention. These objectives are designed to guide decisions and mobilize actions by hundreds of organizations and individuals in the public and private sector, at the national, State and local levels.

As the year 2000 approaches, there is a window of opportunity for revisiting the conceptual framework (e.g. the goals, objectives and priorities) used in organizing the key elements of Healthy People for its next iteration, Healthy People 2010. A confluence of factors in the current environment makes it especially important to rethink Healthy People both carefully and creatively. These factors include:

- the increased demand for accountability and results-oriented performance measurement to ensure that government at all levels is doing the best possible job for the public, in a cost-effective manner;
- a similar increase in demands for accountability and documented results from employers and others who pay for personal health services;
- the enormous growth in the use of managed care as an approach to organizing and financing the delivery of personal health care services;
- an increasing recognition of the overlap and complementarity between the population-oriented functions performed by most public health organizations and the individually-oriented functions performed by most personal health care providers; and (unfortunately)
- the continued growth in the number of Americans with no health care coverage at all and thus with severely limited access to needed health care services, including preventive services.

These factors constitute both opportunities and challenges for Healthy People. In many ways, Healthy People represents a model framework for results-oriented performance measurement, one that can be made relevant to both population and personal health care services. Healthy People objectives draw attention to priority needs and problems. They also serve as a "benchmark" or standard of comparison that can be used to assess performance across the nation and progress over time. They highlight the contributions that can be made, indeed must be made, by a wide range of partners, both public and private, in order to improve the health of Americans. Finally, they embody the enduring commitment of public health to address the needs of those with the greatest need and the most constrained resources.

Given this context, it is especially important to re-examine the framework and functionality of Healthy People. Before a new framework is chosen, it is critical to get high quality input and feedback from the people and organizations who have the commitment and resources not only to endorse our nation's health goals, objectives and priorities, but to take significant action to achieve them. Two groups in particular could be expected both to have creative ideas for revision and thoughtful responses to the ideas of others: the newly expanded Healthy People 2000 Steering Committee, which includes representatives from all agencies within the Department of Health and Human Services, and a broad array of organizations who are members of the Healthy People 2000 Consortium including State mental health, substance abuse and environmental agencies.

Chapter 2. Findings

This Chapter presents a summary and comparison of major findings from all sources as well as summaries of the Steering Committee Retreat and the seven Consortium focus groups. A detailed report of the Steering Committee Retreat and of each of the Consortium focus groups appear as Appendices A and B, respectively.

Findings from All Sources

The most prevalent theme in the Steering Committee Retreat was the size of the Healthy People document, the number of objectives, and the number of priority areas. Most members of the Steering Committee thought the document should be reduced in size, although there were some members opposed to the idea of changing anything about the document. Opinions about the size of the document were some of the strongest held. Opinions were voiced that the document should be cut to assist the States in setting priorities; opposing views were that the document should be kept the same or made larger in order to help the States by providing more information. Many thought the document should not be changed at all in order to ensure continuity.

In contrast, Consortium members spent little time talking about the size of the document or about cutting the document. As a result, they had little discussion about the criteria for inclusion of objectives. While there was some variation in views between wanting the document as a comprehensive reference on the one hand and wanting fewer objectives and more explicit priorities on the other, most Consortium members wanted the document to stay the same size or have additions. In general, States liked the document as a compendium from which to choose priorities and association members liked the level of detail for the objectives most closely linked to their mission.

The one exception was the focus group made up primarily of health care purchasers and insurers which discussed the need to have fewer priorities and objectives. Their rationale for cutting down was to have serious priorities for dedicating resources and forming partnerships.

Another contrast between the Consortium members and the Steering Committee is that Steering Committee members were more willing to make major changes in the organization and content of the document. Most Consortium members did not want major changes in the content of the document but wanted creative changes only in its presentation-- taking advantage of new technology and allowing for more flexibility in how the document is organized. Each Consortium member was asked to say whether they thought the document needed a major overhaul or just minor tweaking. A majority of Consortium members wanted no major changes. They felt the document did not have enough wrong with it to change it. The only changes they endorsed were changes that would make the document more understandable to a variety of audiences.

On the topic of the framework of the document, Steering Committee members were more interested than Consortium members in reorganizing the document. Consortium members, in general, did not consider the organization or framework of Healthy People to be very important. When asked, however, people in both groups liked life stages as a conceptual way to organize because it would make the Healthy People "more about people instead of health departments."

Consortium members did not consider priority areas to be very important either but they did focus on the three overarching goals. Some felt the goals get lost and that there should be additional goals or objectives such as a goal for healthy environments or objectives for public health infrastructure. Some thought the first goal (to increase the span of healthy life) should be changed to "increase years of quality life." This focus on functional status rather than mortality was echoed by employer/purchasers' concerns about having statistics relevant to the healthy worker.

Very important themes discussed in all settings were presentation, comprehensibility, and marketability of the document. Consortium members, especially, were concerned about the potential usefulness of the document in communicating with different audiences. They spoke of community, business partners, and the public as important audiences. They wanted the document more understandable, more sensitive to various community audiences, and less geared to the public health community. Steering Committee members were also interested in the document as a communication tool, but they were more interested in communication with the general public, while Consortium members were more interested in the document's ability to assist in creating alliances with specific community audiences.

Many participants suggested different versions of the document for purposes of communicating to different audiences. Electronic versions were suggested that would allow the document to be reorganized and sorted in a variety of ways.

Another topic agreed upon by all groups was the need for Healthy People 2010 to be relevant to purchasers and the private sector. Participants also voiced the need for outcomes and performance data. Consortium members wanted to know about strategies for achieving objectives and wanted information shared about interventions that work in other communities.

Tensions emerged throughout the Consortium focus groups over two issues: (1) the individual consumer versus the population base of the data, and (2) the problems and benefits of partnerships with manufacturers. However, one message must be emphasized: both Consortium members and Steering Committee members were unanimous in valuing the Healthy People document as a "voice" for public health.

Major Findings from the Steering Committee

There was general consensus on a few topics: first, that the document needs to be **more comprehensible and appealing** to the public and to other groups; next that changes in health care suggest **new stakeholders and new approaches**; and, third, that new technology might be an opportunity to **improve the organization, presentation and dissemination** of the document. Many innovative approaches to the development of Healthy People 2010 were presented as well, such as developing different versions for different audiences.

Well-served **functions** of the document mentioned at the Retreat included its utility as a guide for States in developing **State-specific objectives**, its role in encouraging **collaboration between public health agencies and private entities**, and its role in holding agencies accountable. As a policy making and communications tool, participants felt that it **lends legitimacy to public health issues**, spurs action, and creates targets for planning and delivery of services. As one participant said, the set of objectives **functions as a "message" about the importance of preventive services**. The document also functions as both a standard-setting and a measurement tool.

To serve these functions, the document must be effective as a tool for **communication**. As such, it needs to be understandable to all audiences and it needs to be realistic. However, comprehensibility and appeal to the public and other audiences is an area participants found the current document to be lacking. They also felt the document needs to make a better connection between objectives and the functioning of different kinds of agencies, and that tracking and accountability are needed in agencies other than health agencies. They thought the Healthy People 2000 program should be flexible enough to identify and incorporate changes in what can be measured, what needs to be measured, and the current state of knowledge for the next decade. Participants also felt the document should attempt to be non-partisan, not leader-specific, and to put more emphasis on integration of health objectives.

Changes in health care such as the growth of managed care and employers as purchasers, the discomfort with categorical programs, and the growth of uninsured populations create the need to anticipate different functions of the objectives. For instance, it was suggested that objectives may need to address the infrastructure necessary for local and State public health agencies. It was also suggested that it may be less important now to have narrow targets; rather the document may need to have statements of intent that are concrete but general enough to be measured in different ways. Also, the document may need to involve, and speak to both public and private purchasers of health care and to educators in the health professions.

Steering Committee members felt that the objectives should belong to the public, health delivery professionals and agencies, policy makers, educational institutions, and private corporations. They would like to be **even more inclusive** by involving the pharmaceutical industry, research, and other government agencies such as the Departments of Defense,

Education, Justice, Transportation, the Environmental Protection Agency, and indeed the entire Cabinet.

One theme discussed in small groups was **the size of the Healthy People 2000** document. **Most participants wanted to cut it and make it shorter and simpler**, but **some wanted to expand the document to make it more inclusive**. Both of these opinions related to the needs of the States. One rationale was that States need it to be simpler and more flexible, the other that States need it to be a compendium of objectives from which States could pick and choose. There were many **suggestions for setting priorities including a priority-setting mathematical model using currently available statistics** on burden of illness or economic burden. There were also **many suggested criteria for objectives such as feasibility, measurability, and severity of health problem.**

On the topic of **reorganization of objectives**, attention was paid to the advantages and disadvantages of several alternative ways of organizing. **Many Steering Committee Retreat participants liked the idea of reorganizing by life stages**, because they thought it had more public appeal. Others wanted to keep the same organization as 2000, some with minor changes in categories. Some participants suggested different ways of organizing, such as life settings (schools and work sites) and health risks. In one group, the idea of dual frameworks was discussed; and, **from almost every group, came the idea of an electronic document that could be sorted and organized a variety of ways.**

The area of greatest disagreement was whether to make major or only minor changes to the document. Some participants felt that the document needed no change and that it would be disruptive to change it. Others felt it would be more useful if it were changed significantly.

There were many ideas about how to deal with **special population targets**. One suggestion was that these targets be measured at the State and local level but articulated as a national priority. Another idea was to put the special population targets in separate chapters. The issues of marketability and communication were themes in all groups. Several members suggested developing different versions for different audiences. Public comprehension is one criterion for inclusion of objectives that was endorsed by most.

Data issues were the final topic, especially the advantages and disadvantages of requiring objectives to be already measured rather than only being *possible* to measure. Participants felt that objectives that were already being measured had the advantage of 1) being feasible in times of level and declining budgets and 2) ensuring the availability of baseline data and the ability to analyze time trends and cost-effectiveness. Also, if the objectives are being measured at the national level, the likelihood is increased that they will be measured at a State or local level. Participants also felt that requiring objectives to be already measured concentrates the resources of the Federal agencies on achieving progress on the objectives rather than developing data systems.

Participants thought that the advantage of including only objectives that *are* measured is that it motivates the improvement of data systems. Many felt that there should be at least some objectives that would speak to the development of data systems to collect information on conditions that are not or cannot now be measured. As one member said, the philosophy of management by objectives calls for rules and measurable objectives.

The disadvantage of requiring measured, as well as measurable, data is that it would limit the number of objectives and subpopulations. Also, data would not be available for problems that are emerging. For instance, in 1990 there were only limited data for HIV. Since the document makes a statement about priorities, and unmeasured objectives should not be ignored, it was suggested that there be more goals and sub-goals-- broad "policy wishes "for things that cannot be measured.

Findings from the Consortium Focus Groups

The following is a summary of the crosscutting themes from the seven Consortium Groups.

Consortium members do not want to lose Healthy People as a resource the way it is, both because of continuity and also because it is valued as a reference document. As one participant said, "You don't read the whole encyclopedia; it's just for reference." Many States deal with the size of the document by selecting a smaller number of objectives for their State-level document. They are more concerned that the document include all the programs within the State health department-- that it be broad rather than deep. One State representative said that the document "can't drive a State plan. We can't do anything as narrow and deep as the programs indicated in HP2000."

Associations want the depth of detail for their specific objectives. An association representative responded: "We need the depth. It's valuable to have (all the detail of) our two objectives." Association members said they could extract the pages they used out of the document, so it is not important to them how big the document is. Most agreed that Healthy People 2000 needs more linkages, "It needs an uplink-- a catalogue."

Both groups, States and associations, said they would like to have other materials developed that are geared more toward lay audiences, communities, and businesses. **Most Consortium members want only minor changes to the content of Healthy People but major changes in the presentation.** One State representative said: "It would be nice to have a living document which could change over time, an Internet document with a workbook, which is broader but not so deep." Most members felt there was too much invested in Healthy People 2000 to make major changes.

Consortium members had little commentary about the size of the document. While there were a few comments about the large size of the document and the number of objectives, **very few Consortium members are eager to cut the document** unless they would be required to report on all objectives. As one person said, "Why would anyone want to cut the document? The States can set their own priorities." Because there is little motivation for

excluding objectives, participants said little about the current criteria for inclusion of objectives. Some said objectives should be either measurable, "like HEDIS measures." (HEDIS measures are separated into a reporting set which is ready to be used, and a testing set which requires more work) or they should be labeled "important, but optional, in need of testing."

Themes emerging from the managed care/purchaser group were different from those of Consortium groups. More emphasis was placed on the needs of employers, the challenges of creating an integrated health care delivery system, and issues about the size and inclusiveness of the document. **Emphasis was placed on limiting the number of objectives and making decisions about priorities** so that efforts could be coordinated and resources focused on a few areas. One participant said that the disadvantage of having too many objectives is that it creates competition and leads to inconsistency in prioritization and accountability. It was pointed out, however, that it may be politically beneficial to have a large number of objectives for "political cover." **Most participants of this group thought the strength of the document was that its range, diversity, and comprehensiveness** legitimize a lot of issues and it thus becomes a voice for public health accountability.

Consortium members want different formats (workbooks, patient pamphlets, community resource books, Internet access, linkages, cataloging) **in language appropriate to different audiences** and with sensitivity to the realities and values of different communities. "There needs to be more consumer buy-in. If consumers are aware, they demand it from providers. 'Healthy People' should be a household word. There could be consumer-friendly goals like 'Help you live a longer life' or 'Make your extra years quality years'."

Many felt that as a base for communication with other partners in the community, the document is geared too much toward public health professionals. **Not only the language of Healthy People 2000, but its concepts are geared toward public health professionals.** For instance, "lay people think we're saying that a 15% death rate from cancer is acceptable. Because we need cooperation from communities, we need to pay attention to these pieces." Many participants expressed the opinion that the document is geared toward health departments, not national organizations, businesses or citizen groups, and that it is still very disease-oriented, not geared toward health promotion.

Another member added that, since some terms used in discussing health promotion efforts are not always comfortable to some lower socio-economic groups, "We need technical assistance at the national level to translate for people we're trying to reach." Participants discussed the idea that those living in poverty, whose basic needs for shelter and security may not be met, are not interested in being told about healthy life styles. One member talked about how the concept of health promotion marginalizes some target groups and can have the effect of blaming the victim. Someone else thought the concept of 'health promotion' was condescending. "You don't have to sell health." Another said, "we need to highlight the effects of poverty."

Others thought that consumer-based marketing was not appropriate since Healthy People functions at a population level. "Population disparities are critical and have to be dealt with at the population level." Another added that, even though more of the population is moving into managed care, there is a large group of uninsured persons to be considered. One person was not sure why a public health agenda needed to be understandable to the public.

The document needs to facilitate communication with community leaders and businesses. In fact, members wanted more emphasis on other economic indicators in the community. Some even suggested having a fourth goal about a healthy environment. As one participant put it, "maybe the goal should be to set up community coalitions." Members want material that is useful to communities in choosing their *own* priorities and actions, while using the national document for benchmarking. **They want information on the success of interventions in other communities and how to collect data at a local level.**

Several participants of the managed care/purchaser group agreed that the biggest challenge in creating an integrated plan is assigning responsibility for long term outcomes in an equitable manner to employers, providers, and workers. There need to be different incentives for each entity. One major problem is that entities do not want to take responsibility, or risks, if they do not have control. Also, health plans are struggling with the definition of medical service and the definition of social service, although Medicaid managed care is sometimes pulling the two together.

One participant in the managed care/ purchaser group thought that Healthy People should have more education objectives aimed at changing behavior. Another thought Healthy People did not focus enough on intermediate outcomes like practice patterns. However, a managed care representative said he disagreed with the idea that we need process steps at a national level, but that the document should instead set a limited number of the top priorities. An employer/ purchaser representative replied that he appreciated the database quality. He thought the selected priorities could be "built on a database."

Many participants voiced the need for outcomes or performance data. They also expressed the need for data at a national level and a framework for collecting data at a local level. One respondent said, "Healthy People is valuable to the extent that it gives groups leverage to get data collected." There is also a need for the scientific basis for selecting process measures. Another need expressed was guidance in developing quality of life indicators. Most of the various 'translations' of Healthy People include strategies for meeting goals. One person said, "Healthy People doesn't tell us how to get to the objectives. What are the activities?" Another noted, "That's why Put Prevention into Practice is so popular."

When asked about the value of Healthy People to them, **two participants of the managed care/purchaser group expressed the need for more attention to morbidity rather than mortality statistics for measuring outcomes in a healthy workforce.** A business

representative said, "providers are not as sensitive to employer outcomes." One participant Stated that employers can make contributions in functional outcomes. Another noted that accreditation organizations are changing the focus from process to patient functional outcomes.

Consortium members want the Healthy People objectives to correspond directly with those used by other government programs like Performance Partnership grants and also with quality assurance measures like HEDIS. "Since our resources are being cut, is there *any* way these data requirements can be combined? We can't take on more reporting." **They also want consensus on the types of measures used by each agency.** There are inconsistencies between agencies about age standardization, diagnostic categories, rates versus numbers, and other standards of reporting. There were also suggestions that there be more exchange of information and coordination with international organizations.

Most groups included some discussion about partnerships with business. Some thought if there were a link to existing scorecards like HEDIS, and if the Healthy People 2010 document showed the profitability of prevention, employers might demand health promotion services from insurers. "Maybe HMOs should be judged by comparison with Healthy People." Several participants mentioned wanting buy-in from managed care "now that the distinctions between public health and managed care populations are blurring and public health isn't doing it all." An example of a successful collaboration was presented: in one State, managed care partnered with public health and other organizations to increase the percentage of two year-olds immunized from 35% to 74%, based on the Healthy People objective.

There were several discussions in the focus groups about **partnerships with manufacturers** and the danger of manufacturers' interests conflicting with those of public health. An example was given of a beneficial partnership: Colgate sponsored a dental program in New York City which sent vans into poor neighborhoods to treat school children. Other examples of beneficial partnerships were also cited. On the other side, the Lactation Association representative cautioned that some objectives have no economic advantage to any business. For instance, she would fear having an infant formula manufacturer volunteering to educate young mothers about feeding their infants. One person suggested that Healthy People 2010 should contain a piece on ethics which would include the parameters for partnering with business.

One person said, "while there is a broad set of objectives and a broad Consortium, there is a lack of coordination among the members. Does the lead agency convene all those members interested in their objectives? Shouldn't that be the role of the lead agency?" Members of this group also stressed that payment issues had to be considered more now than in the past and that payers should be involved.

The topic of the different populations served by public health and employer managed care was addressed, and whether or not the targets for these groups should also be different. At issue also is the data used to generate the statistics for Healthy People 2000. One

participant suggested use of a testing set like the National Committee on Quality Assurance employs for objectives without data.

One participant thought Healthy People 2000 tried to do State and local work when perhaps **Healthy People 2010 should be more of a workbook for communities.** Healthy People could set up parameters and tell the communities how to set goals. Another added that the large picture for employers is the "healthy community" and how it leads to a healthy work force and more productivity. One employer representative thought the Healthy People objectives should instead be organized by "life cycle."

On the topic of criteria used for inclusion of an objective, the following suggestions were made by the managed care/ purchasers group: add 'purchasers and providers' under *Responsibility*; add 'stakeholder comprehension' and 'evidence-based' under *Credibility* to account for why the targets were chosen; and add 'actionability' and 'economic impact or the cost-effectiveness of intervention' as criteria.

Consortium members like the Life Stages approach as a way to reorganize Healthy People 2000 because it has more public appeal, "It shows that Healthy People is about 'people' not health departments." One suggestion was to prioritize objectives under life stages and provide linkages between categories in other stages. As one participant said, "Specific narrow objectives promote narrow-minded thinking and encourage turf battles. We want to create overall health and not health fiefdoms."

One concern about life stages was, "although it is a good way to organize considering the demographics of the country, it would pit different generations against each other." Another concern was that, since the life stage organization does not fit the way most health departments are organized, it may be harder to assign responsibility. Several participants pointed out that duplication of objectives would occur with any organization, e.g. the need to have physical activity and nutrition objectives at all life stages. These participants agreed that with an electronic version, it would be possible to organize the document by life stages or by its current priority areas. **Most Consortium members, but not all, like the Life Stages approach as a way to reorganize Healthy People 2000.**

Some thought the objectives should be tied directly to the goals because the goals get lost. There were several suggestions for other goals, such as an environmental goal, "access to appropriate clinical services, health promotion, and protection," and community partnerships as a goal. Members thought the priorities should come from the bottom up-- that individuals and communities should decide their own priorities and that public preferences should be considered. Some thought emphasizing goals and leaving objectives more flexible would serve localities the best. Participants also thought **there should be more emphasis on public health infrastructure and standards for access to primary care and health protection.** One group suggested putting "a definition of health and the purpose of the document up front."

Chapter 3. Methods

Information was gathered through two major activities: (1) the conduct of a Steering Committee Retreat and (2) the conduct of 7 focus groups with members of the Healthy People 2000 Consortium. This information was then organized, analyzed and presented both in written form and through in-person presentations to ODPHP staff, the Healthy People Steering Committee, and The Secretary's Council on National Health Promotion and Disease Prevention Objectives for 2010.

The project was conducted in an iterative process of data gathering, review and revision leading to identification of themes. That process consisted of the following steps:

1. Preparing draft questions we thought relevant,
2. Interviewing Steering Committee members to identify the issues they thought important,
3. Creating "framework options" to be shown as examples,
4. Gathering data at the Steering Committee Retreat,
5. Revising the questions and "framework options" for a Consortium member pilot focus group,
6. Revising the moderator's guide for additional Consortium member focus groups based on the pilot, and finally,
7. Conducting an additional focus group based on issues raised in earlier groups.

Initial Interviews

After meeting with designated ODPHP staff, we identified additional staff and Steering Committee members who would represent a range of expertise and perspective with respect to experiences with Healthy People 2000 and opportunities and challenges inherent in developing Healthy People 2010. We then developed a brief, semi-structured protocol for a telephone interview with up to nine individuals from this group. Key findings were summarized which helped define priority topics and led to revised framework options for consideration at the Steering Committee Retreat. The interviews also identified participant preferences regarding the design of the meeting itself.

The set of questions we developed to begin the process were as follows:

- How should the three overarching goals of Healthy People 2000 be adjusted for 2010?
- Should the objectives be organized according to more broadly-defined areas (e.g. life-stage or special population category?)
- Would a cross-cutting framework make it difficult to identify objectives of common interest (e.g., physical activity)?

- If the current priority areas were maintained, what additions or regroupings should be considered?
- Should the 2010 plan use a shortened list of objectives that acts as the centerpiece of the agenda (e.g., 10 goal Statements with accompanying indicators?)
- What criteria should guide objectives development?
- Because service and protection objectives have proven to be most difficult to track, should this category of objectives be eliminated?
- As a way of paring down the list of objectives, should sharing of objectives among priority areas be eliminated?
- Should special population targets continue to be used to highlight disparities among groups? If so, how could these be better organized in a new framework?
- Should the 2010 plan be broadened to include social and economic indicators of importance to health?
- How would data collection be affected by changes to the framework?
- What data are available for objective setting? Are there new sources? What are the major gaps?
- How could the design of the framework make the document more relevant to purchasers/employers and managed care organizations? (e.g., should the framework tie health outcomes to insurance status?)
- What is your vision of a national public health surveillance system for the 21st century? How can Healthy People 2010 support your vision?
- What changes do you think will occur in the next decade that are relevant to planning a prevention agenda for 2010 (e.g., changes in health care delivery systems, preventive health, and demographics)?

Steering Committee Retreat

The results of these interviews made it clear that some, but not all, of the issues raised above would be important topics to discuss at the Steering Committee Retreat and that some topics would elicit more discussion, and controversy, than others. Given the size and diversity of the Steering Committee, and the need to get a good deal of high quality input on a number of topics, it was critical that each Steering Committee member have ample opportunity to speak and to respond to others. To achieve this purpose, CHOIR staff designed the agenda to include plenary sessions with formal presentations and ample opportunities for question and answer; at least two rounds of small group breakout sessions, facilitated by members of the CHOIR team; and additional plenary sessions to permit small groups to report back to their colleagues and the group as a whole to synthesize discussions (See Appendix A for the detailed agenda). The sixty participants were divided into six small groups. The Project Director, Dr. Shoshanna Sofaer, moderated the entire day. The Project Coordinator, Ms. Barbara Kreling and four other professional facilitators moderated the small groups. The entire event was audio-taped and the tapes were transcribed. In addition, we used easels with newsprint to capture and report back on group discussions; these pages were also transcribed.

To prepare for the retreat, it was necessary to identify and/or develop background

materials. Included in such materials were alternate "templates" for the group to consider and respond to, for the Healthy People 2010 framework. These exhibits, shown in Appendix D, were provided to the participants in chart form and as handouts. A detailed agenda and guides for the breakout sessions were also developed. Following the Retreat, and informed by discussion at the Retreat, the moderator's guide was developed for the first Consortium member focus group.

Consortium Focus Groups

The Healthy People 2000 Consortium was founded in 1987 by the U. S. Public Health Service in cooperaion with the Institute of Medicine of the National Academy of Sciences. The Consortium is made up of 330 national member organizations representing the professional, voluntary, and corporate sectors, as well as State and Territorial public health departments, mental health and substance abuse departments, and environmental agencies.

A pilot focus group of Consortium members was conducted to test the questions and timing of the draft moderator's guide which was developed following the Healthy People Steering Committee Retreat in September, 1996. The pilot group was conducted in October, 1996, in Bethesda, Maryland. It was composed primarily of Washington-based public health association representatives, a local State agency representative, and other national professional association representatives. Participants were selected by ODPHP and invited to participate. All groups were video taped and reviewed by project staff. The moderator's guide was revised based on the experience of this group. Moderator's Guides for each of these groups appear in Appendix C.

ODPHP mailed invitations to all Consortium members to attend the Consortium Meeting in New York in November, 1996. At the same time, they invited all attendees to participate in focus groups the day before, during, and the day after the Consortium meeting. All those who accepted this invitation were included in groups.

The final moderator's guide included the following questions:

- Does the Healthy People document need a major overhaul or just minor adjustments?;
- What works and what does not work about the way the Healthy People 2000 document functions?;
- What are the implications for change?;
- Should the organizing principles, the priority areas, be changed; If so, how?; and
- Should the criteria for setting objectives be changed?

There was good representation from both State and association members at most meetings, except on Friday afternoon when State members participated in the Consortium meeting and were not available for focus groups. Table I on the following page shows the participants of each group.

Consortium members who volunteered for the groups were enthusiastic participants and were thoughtful in their responses. The moderator stated at the beginning that the scope of the discussion would not include specific objectives or priority areas. Perhaps as a result, there was little "lobbying" for special interests. In fact, although the moderator also said that it was not necessary to reach consensus, participants made an effort to consider the positions of others. For instance, State representatives who wanted a "broader and shallower" program acknowledged the needs of associations for a greater level of detail and addressed ways associations needs could be met.

Following the New York Consortium focus groups, which often noted the growing importance of business, employers, and managed care, another focus group was arranged which included representatives of managed care, and employer/purchasers. This group, held in Bethesda on February 25, 1997, was attended by two representatives of a large manufacturer; two representatives of a patient Information and education group; a representative of an association of businesses who purchase health care; a representative of an association of health plans; and a corporate representative of a large health plan.

HEALTHY PEOPLE 2000 CONSORTIUM MEMBER FOCUS GROUPS

PILOT (1)	NEW YORK (2)	NEW YORK (3)	NEW YORK (4)	NEW YORK (5)	NEW YORK (6)	MANAGED CARE (7)
Cheryl Beversdorf **ASTHO**	Ed Anselm **American College of Occupational and Environ. Medicine**	Mary Barger **American College of Nurses-Midwives**	Andrew Briscoe **The Salt Institute**	Mary Ellen Bradshaw **D.C. Commission of Public Health**	Edward Bernstein **Society for Academic Emergency Medicine**	Bob Bertera **Dupont**
Jeanette Jenkins **MD Department of Health and Mental Hygiene**	Nancy Barnes **American Dental Hygienists Association**	Elvira Jarka **American Dietetic Association**	Janet Chapin **American College of OB-GYNs**	Frances Cook **Assoc. of State and Terr. Public Health Nutrition Directors**	Ronald Eckoff **Iowa Department of Public Health**	Ruth Brannon **Washington Business Group on Health**
Glenda Koby **APHA**	Susan Davidson **National Osteoporosis Foundation**	Candace Friedman **Association for Practitioners in Infection Control**	Hazel Keimowitz **American College of Preventive Medicine**	Shirley Girouard **National Assoc. of Children's Hospitals and Related Institutions**	David Gies **National Stroke Association**	Ray Bullman **National Council on Patient Information and Education**
Preston Littleton **American Association of Dental Schools**	Karen Derrick Davis **National Civic League**	Karen Gordon **American College Health Association**	Katherine Kirkland **Association of Occupational and Environmental Clinics**	Paul Lehrer **Assoc. for Applied Psychophysiology and Biofeedback**	Margaret Lumney **American Association of Colleges of Nursing**	Liza Greenberg **American Association of Health Plans**
Stephanie McGencey **NASADAD**	Carole Kauffman **American Red Cross**	Nancy Maddox **Assoc. of Maternal and Child Health Programs**	Dorothy Kozlowski **National Alliance of Nurse Practitioners**	Doris Luckenbill **National Association of School Nurses**	Richard Wittenberg **American Association for World Health**	Mimi Kramer **Dupont**
Nancy Rawding **NACCHO**	Vincent Lafronza **NACCHO**	Cathy McNeil **Int'l. Health, Racquet and Sportsclub Assoc.**	John Shoemaker **Prevent Blindness America**	Rose Marie Martin **New Jersey DHHS**	Jennie Tasheff **Kansas Department of Health**	Don Nielsen **Kaiser Permanente**
Robbie Roberts **Environmental Council of the States**	Deborah Laufer **Rhode Island Department of Health**	Mary Anne Roll **The National PTA**	Allen Wicken **American Physical Therapy Association**	Mary Salazar **American Association of Occupational Health Nurses**	Aubin Tyler **Arizona Department of Health Services**	Lee Rucker **National Council on Patient Information and Education**
Shirley Shelton **American College of OB-GYNs**	Nancy Schweers **Int'l. Lactation Consultant Association**	Terrance Schiavone **National Commission Against Drunk Driving**		Susan Stapleton **National Association of Childbearing Centers**		
Herbert Young **American Academy of Family Physicians**	Laverne Snow **Utah Department of Health**	Susan Strauss **Emergency Nurses Association**		Becky Smith **American Association for Health Education**		
				Miriam Roskein Berger **American Art Therapy Association**		

The moderator's guide was revised for this group and included the following questions:

- Why do we have the objectives and who owns them?
- What are the opportunities presented by changes in health care for the development and use of Healthy People?
- What are the challenges?;
- How can your organization contribute to the Healthy People objectives development process?;
- What kinds of specific changes are needed in building Healthy People 2010 so it can have a more positive impact on your organization and on health care?;
- What should be the criteria for inclusion of objectives?

Analysis

As mentioned earlier, the meetings and groups generated a huge amount of qualitative data which had to be analyzed and synthesized. The meetings with the Steering Committee and Consortium members resulted in a substantial body of fairly "raw" data, that was carefully analyzed to reveal various kinds of patterns:

- commonalties and differences in the responses of a single group to a given question
- commonalties and differences in the responses of multiple groups to a given question
- patterns in how responses to different questions relate to one another
- issues on which there are strong reactions
- issues on which there is a fairly weak or limited reaction

Each set of groups was observed by more than one researcher so that interpretations could be compared and validated.

APPENDIX A

STEERING COMMITTEE RETREAT PROCEEDINGS

The Healthy People 2000 Steering Committee Retreat was held in Bethesda, Maryland, on September 19, 1996. The Center for Health Outcomes Improvement Research (CHOIR) of George Washington University assisted ODPHP by planning the Retreat, moderating the plenary sessions and breakout sessions, and recording the results. This report is a summary of the Retreat, whose purpose was to elicit the perceptions of Steering Committee members about the Healthy People 2000 framework and the need for modifications for Healthy People 2010.

The Retreat was held in the ballroom of the Holiday Inn in Bethesda, Maryland. Additional small rooms were used for breakout sessions. All sessions were taped and transcribed, totaling 22 hours of proceedings. Appendix A contains the Agenda and the Focus Group Moderator's Guide, which was used by the moderators of the breakout sessions. The Agenda and Moderator's Guide were developed in collaboration with ODPHP following nine in-depth interviews conducted with Steering Committee members. Appendix B contains handouts given to participants and a list of tasks for breakout session leaders.

Dr. Shoshanna Sofaer moderated the plenary sessions; breakout sessions were moderated by five professional group leaders. The Retreat was attended by 60 Steering Committee members and work group coordinators (see list of participants at the end of Appendix A). Each breakout group included 10-12 members, selected to spread agencies and priority areas across groups. The stated purpose of the meeting was to obtain as many perceptions, opinions, new ideas, and suggestions as possible from as many members as possible. Since this was the first meeting in the effort to begin development of the 2010 report, it was not necessary for the Committee to reach consensus, only to bring out the full range of ideas as possible to establish a ground from which to begin. The Agenda was designed to fulfill this purpose by creating structured tasks, by moving from large to small groups and by employing "brainstorming" and small group techniques. There was enthusiastic participation from Steering Committee members and a large quantity of material was generated. The following is an overall summary of the results of the plenary sessions and the breakout groups combined, followed by summaries of each breakout group.

Dr. Earl Fox, Chair of the Healthy People 2000 Steering Committee/Deputy Assistant Secretary for Health for Department of ODPHP, opened the meeting with a brief introduction and discussion of future plans. He reported that the Secretary for Health and Human Services has indicated a desire to become more personally involved in the evolution of Healthy People 2010 and would chair a Secretary's Council made up of all Assistant Secretaries of Health and current Agency heads. He then turned the meeting over to Dr. Sofaer who welcomed participants, introduced staff, and discussed the agenda and "rules" for the Retreat. The first session was a "brainstorming" session. "Brainstorming" was defined as a method of getting information from a group in which the group is encouraged to be spontaneous, all answers are considered valid, and agreement and consensus is not expected. The following summaries reflect the result of "brainstorming" activity. They are neither a consensus of group opinion nor do they represent anyone's official position. All comments in the following text are either quotations or paraphrases of actual comments from Retreat participants.

Morning Plenary Session

- **Function of the objectives: critical value and role**
- **Major changes in health care: new functions objectives must serve, functions no longer important**
- **Who should be involved in developing and using objectives?**

The first topic was the **purpose and function** of Healthy People 2000. Participants responded with three general categories in which the document functions: as a policy-making tool, as a publicity or communications tool, and as a standard-setting and measuring mechanism.

Providing direction to States was mentioned as a most important function, but in general, the document is seen as valuable for the facilitation of policy setting by creating targets for planning and delivery to both population health and personal health services. It is a way to provide guidance at a local level on what is feasible. It also functions as a stimulant to progress and a way to focus efforts and provide performance standards for health care delivery systems.

The objectives are useful to local and State entities by giving them a sense of what science says is do-able. Putting something into an objective legitimizes it and makes it something in which to invest resources. A very important function is to secure funding. It was stressed that we need to listen to the States, to what their needs are. A function of the Healthy People objectives is to present a broad and comprehensive menu of objectives from which States and localities can choose on the basis of their own priorities. Another function is that of cross-categorization. By making connections between priorities and highlighting the relationship between problems, the objectives facilitate strategic alliances.

Finally, the program's purpose and function is publicity and communication. It increases the visibility of prevention and articulates the priorities of the public health community. It can be used as a guide to academics who are trying to set up curricula for all kinds of health professional training.

In a discussion of **What the Healthy People program is doing well**, the first function mentioned is that it lends legitimacy to public health issues and it spurs action. It has been a guide for States in developing State-specific objectives and has encouraged increasing unity and cross-fertilization across public health service agencies. Progress reviews have been a setting for holding agencies and people accountable. The goals provides a focus on the needs of special population targets. Also, having objectives with numerical targets highlights areas where we do not have data, or where we don't have systems for collecting data in a systematic and consistent way. The objectives have highlighted chronic diseases and the issues in addressing chronic diseases. They have put medical societies and other professional groups on notice with respect to the importance of preventive services and they have been a focal point for not just the interagency collaboration on the public side, but also of partnerships with private sector entities as well. Healthy People has provided a mechanism for staying on the path and persevering. It is a long-term program and a template that can be useful for making resource allocation decisions.

If **Healthy People needs improvement**, it is in the following areas: first, it needs to be more flexible to make a better connection between the objectives and the functions for very different kinds of agencies such as research agencies and operational agencies. One person noted, "You do not want to have an objective people look at and think, 'that doesn't apply to me. There's nothing I can do about that.'" It needs to maximize the inclusion and sense of responsibility of other sectors in terms of their impact on health. The tracking and accountability needs to be broader than just public health agencies. The objectives need to reflect buy-in at the highest levels of DHHS and the Public Health Service, and from <u>all</u> of the Public Health Service agencies. There should be more emphasis on integration of health objectives.

The objectives should be legitimate to academia and health care delivery systems. There should be a more efficient way to identify and incorporate changes both in the need to measure and in what needs to be measured, and we need to be up to date with science and the current state of knowledge. That is the challenge of setting 2010 objectives in 1998.

The objectives need to be simplified and more appealing to the public. The Public Health Service has not accomplished the criteria that has to do with public comprehension. And, in addition to having understandable objectives, Healthy People needs to do a better job of demonstrating what kind of a difference it makes economically when objectives are achieved. It needs to be more convincing about the value of funding prevention, both to agency heads and to the private sector.

The big function of these objectives is that they are a <u>message</u>. The set of objectives needs to be realistic, not a 'wish list'. The objectives should be understandable to all audiences and measurable by the States.

The document should remain non-partisan so that it will be useful and not leader-specific.

Changes in health care which might impact Healthy People were discussed by Dr. Sofaer. These included the 'incredible' growth of managed care in the United States; a breakdown of the bifurcation between medicine and public health; and the increasing discomfort with categorical programs and categorical ways of thinking

about health problems.

Others added: parity issues, primary care versus specialty care, mandatory Medicaid managed care, uninsured populations, accountability, employers (including the public sector) as purchasers of health care and employers' interest in prevention.

In thinking about changing conditions affecting Healthy People 2010, it was also suggested that objectives may need to articulate infrastructure standards or specifications for local public health agencies and anticipate changing roles for local and State health departments as well. In other words, "we still have the "mountain" in front of us which is the 40 million uninsured people out there... and the number is going up."

One suggestion for dealing with future change is to realize that now it may be less important to have very narrowly defined population groups, measures and targets. Instead, it may be more important to have statements of intent that are concrete but general enough so that they could be measured in a lot of different ways.

Healthy People 2010 will need to involve and effectively speak to purchasers, public and private; reinforce focus on **people** and their health, including mental health; and consider new overarching determinants of health. It may also be involved in curriculum development with health schools to incorporate prevention in training.

Next, the group considered the question, **What functions of Healthy People objectives are no longer as important?** The first of these mentioned was its function as an encyclopedic cataloging of health objectives. We should recognize that some things will take place independent of Healthy People. The new document may use proxy measures, including objectives that are less specific and more generally applicable.

To answer the question, **Whose objectives are these?**, Steering Committee members listed the following beneficiaries: First, the public. Then, people who deliver preventive health and mental health services; policy makers, at a local, national, Federal, and State levels; international health agencies; educational institutions and volunteer agencies; private corporations; and future generations.

When asked, **who do you think the objectives should be for?** participants answered: the communications industry; pharmaceutical industry; research; Department of Defense; Department of Education; Justice; Transportation; The entire Cabinet; Environmental Protection Agency; and some who do the work -- not calling it "Healthy People 2000," but with goals that are the same. (The discussion of who are the **current active stakeholders** did not occur because of lack of time).

Breakout Sessions

- **Organizing principles**
- **Number of priority areas**
- **Criteria for determining priority areas**
- **How many objectives**
- **Criteria for including objectives**
- **Addressing differentials across populations**

These small group discussions lasted a total of two and a half hours; each Steering Committee member participated in one of the groups. Themes across these groups were: the size of Healthy People (most participants wanted to cut it, but some wanted to increase the size); whether and how to reorganize (many participants liked the idea of reorganizing by life stages, some wanted to keep the same organization as 2000, a few wanted a different organization); and whether to make major changes (a slight majority wanted major change but strong arguments were made for little change).

There were many ideas about how to deal with special population targets. One suggestion was that these targets be measured at the State and local level but articulated as a national priority. Another idea was to put the special population targets in a separate chapter.

One issue on which there was agreement was the need to make the document more simple and appealing to the public; the issues of marketability and communication were themes in all groups. Several members suggested developing different versions for different audiences. One criteria for inclusion of objectives that was endorsed by most was public comprehensibility. Another was the goal of making the document more useful to the States and localities, whether by making it more flexible, more inclusive, or more understandable. Ideas ranged from making the document much shorter and simpler for the States to making it longer and more inclusive to be used as a compendium of objectives from which States could pick and choose.

There were many different suggestions for setting priorities including a priority-setting mathematical model using currently available statistics on burden of illness and economic burden. The issue of risk behaviors versus diseases was also debated. There were also many suggestions for setting criteria for objectives.

Taken together, the small groups represented the diversity of opinion that exists in the Steering Committee. In all cases, there was thoughtful, intelligent conversation informed by a variety of experiences with the Healthy People program.

Healthy People 2000 Steering Committee Retreat

Breakout Group #1

The overall reporting statement was: **Reorganize by life stages or life settings. Keep it simple for the public's perception. Twenty two priority areas is too many and they need to be phrased in a more realistic and user-friendly way to make the document more useful to States and localities.**

Topics of interest from this group were:

- Increase flexibility with a ground-level approach to developing the document which would better serve State and local needs.
- Reduce the size of the document.
- Create a dual framework including life areas and life stages. Include health goals that are more general with objectives that are ranges, not targets.
- Restate criteria for inclusion of objectives.
- Create a public document.

Flexibility to serve State and local needs

In speaking of a recent meeting, one man said "The state and local people were involved and they did want **flexibility**... that was a key word used over and over again. And by flexibility they meant they wanted things to be a little more functionally operational... they are looking for something that would more appropriately be called a '**primer**'."

One woman added, "for the most part people from the States did not feel the objectives as we have presented them in our document were useful to them at the State level. They re-wrote what they could use." Another added that there were not written rules that applied to individualized State or local needs including priorities for the epidemiological areas which localities were addressing, or populations of most concern to them at the local levels.

One suggestion was "to build the implementation into the objectives... build the implementers into the objectives whether it's the State and local health departments or the health care financing agencies... or whether it's the managed care companies that provide health care... When we go out with these objectives, if we want them to actually have any meaning, they've got to be taken up by the people who are actually going to be implementing them, you know, providing the services... or using them for research and teaching. So, build the implementation into the objectives. Like you would do with research, build in the evaluation from the beginning."

Another comment was that there are not enough resources and so the groups responsible for implementation have to have ownership. The goals cannot just be 'political'. "So much of what we do is based on personal value commitment to the whole notion of preventive medicine."

Reducing the size of the document and number of objectives and priority areas

Speaking again of State and local people, "everybody made jokes about the size of the document. The fact that it was intimidating. I think that if we have less objectives and set priorities among them... in other words, selecting out a few objectives in each of the priority areas... and that's not doing away with Healthy People 2000, by the way... I think that everybody has that as a template."

Another woman said, "we have to talk about the vital few... we have to clearly articulate the real goals of the public health community" which brought up discussion of whether it should be the goals of the 'health

community', **not** the 'public health community'. Most agreed with this statement.

Restructuring organizing principles: dual framework

Many participants liked the idea of life stages, although one woman said that the 2000 document already had a chapter about life stages. She wondered if a dual framework might not be a good idea. "You could maybe give more emphasis to the life stage organization and also have the priority health problem with fewer objectives. I'm wondering whether you could have a qualifiable, overall objective... and then, in addition to that, have monitoring of all the things that are important to us. Be that State data, local data, data by age, gender group, data by ethnic/ racial group. But to not set individual 2010 targets for all permutations of that. But choose. Say up front of all these data are important to us, with this overall objective and intent. But to not lessen the importance of collecting data in all these different areas, but not necessarily say that your 2010 target for men 20 to 39 for this and that."

Several people agreed. One said that one State canvassed the health departments about approaching the objectives through behaviors. They sent a survey out to the population and they chose diseases. People can relate to diseases and that's problematic from the way we think now. Doing it on an age basis may get around that and be a little more acceptable to the population. A woman responded, "Yes, we have a sense of that with our cross-cutting work groups. We're talking about people and one thing people have in common is life stages."

Several agreed that what they were discussing was about 50 health goals with about 300 more specific targets underneath. One further suggestion was that the objective at a national level might be non-quantifiable-- that everyone could then quantify. Someone else pointed out that the first surgeon general's report promoted disease prevention was categorized by age categories. That was a template to the Healthy People 1990. "It might be time to think in terms of... being less specific and putting them in age categories."

This led to a discussion of which life stages should be included. It was suggested to follow the example of the Canadian Task Force, that pre-pregnancy was also important. Someone else asked if they would do a subset of, for instance, adult males and adult females.

Healthy People 2000 Steering Committee Retreat

Breakout Group #2

The overall reporting statement was **"Don't tweak the existing structure too much. So much effort, money, systems, State plans [are] based upon the existing Healthy People systems."**

Other topics of discussion in this group were:

- Change only with reason.
- Life stages or life phases are not good alternatives to the current categorization of Healthy People.
- Prioritize objectives in terms of "degree of disparity of health," identifying where the major problems are and for what sections of the population.
- Speak to the health care needs and problems of the "disenfranchised" and special population targets, or keep strictly measurable objectives and national goals, leaving sub-population objectives at the local level.
- Include overarching non-health outcome objectives that lead to higher health care standards for the nation, e.g. monitoring health insurance coverage, and the quality of managed care.
- Develop system of **exclusion** of an objective.

Change with reason, no need to reinvent

One woman stated, "I personally like the categorical organization... one of the underlying principles is that you know it allows flexibility for States and communities to select and develop their own priorities from these federal priorities. A man agreed pointing out that "the model that we are using now has been widely accepted by... almost all state and local governments... If we use an entirely different model, everything that's been done by the States to this point is going to have to be radically changed. So basically I think unless there is a reasonably strong reason to change the model we should try to use as much of the model as we can ... that's already in place." This idea of retaining as much of Healthy People's current structure as possible was a major theme throughout the group's discussions and "flexibility for States" was determined as an overarching principle of Healthy People.

Don't reorganize by life stages

One woman commented, "Maybe there's a way of simplifying that structure and then adding a component or two, sort of at the overarching end of it. Rather than disassembling it and creating something new that ... at least for me it would take a long time for me to even figure out for example, this life phase thing." Everyone agreed that minor changes should be made but that Healthy People 2010 should be "built upon the existing model". Organization by life stages or phases was not an appealing alternative to the present categorization for this group. One woman felt that using life stages or phases would involve "artificially forcing things into categories." The main concern of the group members was to improve Healthy People but not change it dramatically "so as to not disrupt state efforts/ funding."

In discussing organization one woman said, "I think choosing priority areas matters... going back to the book, it's a chapter system, not a priority system... If we had **real** priority areas, we could be flexible with what the objectives were... and how many there were" A man added, "Objectives should reflect not only outcome objectives ..but objectives for policy and an ecological model as well as health status outcome objectives."

Prioritize by issues having overall health impact

The group discussed prioritization of objectives as a way of simplifying Healthy People "at the overarching end." One woman suggested that prioritization be dependent on where "our major public health problems are today," and another woman suggested it be determined by the degree of disparity in health: "Between the

healthiest among us and those at the bottom of the curve. And the objectives that you have now even, with the data, help you find some of those questions to answer without changing the questions so much." The group came up with a strategy to reduce the number of priority areas to 19 by taking out (4)Substance Abuse: Alcohol and Other Drugs, (8) Educational and Community-Based Programs, and (22) Surveillance and Data Systems, and putting them under other priority areas "as they are appropriate." There was no real explanation for this but everyone seemed to agree with the idea, and one woman added that mental health should also be dealt with "under the appropriate priority areas."

Address special populations

One woman stated that "maybe there should be an emphasis more on where... when you say [all] citizens, you know, I mean there are definitely some that are [left] out here, that aren't getting the benefits of a lot of this." She later stated that "the structure should be one that includes key health issues for disadvantaged or disenfranchised populations... And I guess by 'disenfranchised' I mean... people who don't have health insurance, people who don't have access to any of the current [health care services]." Other group members agreed with this point but argued that the difficulty in accurately keeping track of sub-populations and special conditions over time made it unrealistic to prioritize Healthy People objectives in terms of special target groups.

Include overarching non-health outcome objectives such as insurance coverage and managed care

One woman wondered, "could these health objectives possibly be constructed or even used.... so that they would start to set standards of basic health status in this country... that managed care or any other providers could eventually be held to in some sort of official or quasi-official manner?"

System of exclusion of Healthy People objectives

The group members presented several criteria for setting priority areas and objectives. Measurability, multi-agency buy-in and consensus, and public believability were each important criteria according to the group. Also, one man stated that for an issue to become a Healthy People priority area, it is imperative that "there is an intervention, infrastructure and stakeholder structure around the problem." Another man emphasized the need for infrastructure behind a priority area, commenting that "the availability of resources and whether or not there is an infrastructure in place capable of dealing with the issues" should in large part determine the inclusion of a priority area. In order to scale down the number of objectives for 2010, the group suggested the establishment of a system of exclusion for Healthy People objectives based on measurability, feasibility, and a defined "cut-off point" of importance and funding. The group also discussed limiting the number of objectives per priority area to approximately 7, pushing agencies to include only the most crucial and data-accessible measures.

Another idea was to throw out the disease chapters and approach things through behaviors. Bringing up the survey of the population, someone added that, "The Congress represents the people. They think in terms of diseases. That's why we have disease Institutes".

"The categories as they stand now are confusing to the public. There is health promotion here and health preventive services there. It's doubly confusing because they're so similar. It appears that there are no services in some areas."

One man said, "I think that we have to live with the priority areas. Because we wanted to make something that was all encompassing in terms of disease. I would just as soon live with the priority areas. But I would rather see us think in terms of how we could address them from the age perspective. Because there are things that you can do behavior-wise as well as risk-assessment wise, at different ages, that impact these priorities to a greater extent by doing it that way. And, like immunization for instance, or even sexually transmitted diseases, when it comes to adolescents and young adults. Cancer more in old age and things like that. And things like physical activity, tobacco and alcohol use should be very early on-- should be at the elementary school, K to 12 levels, where you can really... when you set your behavior in life. So, I mean, there are... we can address it from those perspectives and I think we could do it well."

One participant felt that not everything could fit under life stages, "That can't be the only framework, there are things important to the area of health protection... that has to be a special section, the community health section." Another added, "..by making community health a separate entity in a group of four, you put actually more emphasis on it than you would if it were a separate entity."

Create a public document

There was some conversation about the public as an audience. One person thought it was important to be able to explain the framework to the public. Another said, I don't think of the public as a player. "I don't need to know how a car works to buy one." It was suggested that the public could know the "Top 25 Health Problems" without knowing the indicators. You could also interface with the providers this way. You could ask, 'are they going up or down?' and focus on them. Someone else added, however, "I still like the life stage idea of clinical preventive services. People think in life stages." A woman added, "If you do life stages, you can do just four or five most important things to do when you are at that age."

One woman suggested that you could say, "The health community wants every American to have a healthy childhood, healthy adulthood, healthy elder life... and these are the ways by which you can have a healthy childhood... etc."

One man felt that, "we have failed to communicate what Healthy People 2000 is all about to anybody outside of the Public Health Service." A woman added, "we may have failed in two different aspects. One of them is organization...and the other one might be that the objectives weren't relevant."

Restate criteria for inclusion of objectives

Suggestions for criteria were the following: Objectives should be measurable if there is a target but they can also be deliberately non-measurable without a target. They should be able to be applied locally, with local priorities based on severity or prevalence by population or locality. An effective intervention should be available. They should have scientific validity and a balance between outcome and process. They should be comprehensible to the public and reasonable and do-able at the local level.

Healthy People 2000 Steering Committee Retreat

Breakout Group #3

The overall reporting statement was **Keep comprehensiveness of Healthy People because of the purposes it serves at the State and local levels, and work to achieve greater inclusiveness-- *more* objectives. The structure of Healthy People should be reorganized in order to better relate goals with priority areas and objectives.**

Other topics of discussion in this group were:

- Don't change for change's sake because there needs to be justification for major changes given the investment that has been made at the State and local level.
- Expand the number of objectives to create a 'compendium'.
- Revise the criteria for inclusion.
- Identify response parties and establish buy-in.
- Include information about economic cost to nation, and responsible agencies for each objective.
- Clarify the Four Categories to break up priority areas and objectives.
- Pay more attention to goals Two and Three.

Don't change for change's sake

This group agreed that major change for Healthy People 2010 would either be counterproductive to State and local programs, or it would be a futile effort as "the States and communities would still be doing the same thing" regardless of a major overhaul at the Federal level. One person felt that radical modifications would mean that "You lose what we've gained in the last 20 years if you change the framework... 41 States have Healthy People plans...why interfere now?" It was important to some members of the group that the document be "organized the way the Public Health Service is organized." That organization was "comfortable."

Expand the number of objectives

The group felt that the number of objectives should not be reduced. The group agreed that a goal for Healthy People 2010 should be to **expand** the number of objectives, reflecting the advancement of technology and data collection methods. As one woman stated, "the purpose is to make sure we cover the waterfront." Another woman commented that an increase in the number of valid objectives would signify progress in the work to address health disparities across the population. State and local people seem to like the compendium approach because they can then extract what they need. One participant said, "There should not be an arbitrary limit to the number of objectives... There are technical ways to handle all of the objectives and get them to the constituency."

Revise the criteria for inclusion

It was important to this group that there be strict criteria for Healthy People objectives to prevent the document from becoming a "utopian wish list." An objective should be included based on the following criteria: Will it make a health impact? Is there sufficient scientific foundation that would make it compelling to invest in the area to improve health? Is it a significant health issue regardless of data available? Is it a significant health problem <u>now</u>? What is the economic cost to the nation of the disease?

One person addressed the issue of flexibility, "We need a way to expand areas as new information becomes available, have 'place savers' for new objectives." It was also suggested that the criteria be related to one or more of the Goals.

Most of the time in this group was spent discussing criteria for objectives. They should be measurable, attainable and feasible, based on science, and realistic. They should not be duplicative with the intent of other

objectives in any priority area. They should not be repeated from priority area to priority area. Significant cost to the nation should determine the need for an objective.

Identify responsible agency for implementing and tracking objective.

Members of the group felt that it was important to include information about the economic cost to nation of each disease, and to clearly identify the responsible agencies for each objective.
Ideally, the objectives would be independent of political will. The entity responsible for making the change would be clearly identified-- be it individual, community, organization or government. It should be agreed to by the parties that have to do the tracking and be relevant to the purpose of the organization.

Rewrite categories with clearer headings and focus on first two goals

To better organize Healthy People, one woman suggested reshuffling the objectives in an effort to clearly relate the goals with the priority areas and objectives. She stated, "Whether you accept the current goals or not, it has to be connected better." "The data can be repackaged easily to meet constituent needs." The group agreed that Goals 2 and 3 (to "Reduce health disparities among Americans," and to "Achieve access to preventive services for all Americans") were not being "paid any attention" and that the 4 categories (Health Promotion, Health Protection, Preventive Services, and Surveillance and Data Systems) were too vague and needed "clearer headings."

Pay more attention to Goals Two and Three

The opinion was expressed that the current objectives meet only one goal and that the other two get lip service only. It was suggested that a strategic plan for focusing on the other two goals, and creating other objectives to meet these two goals, would be a way to change the focus. One member said, "If you look at the objectives in relation to the goals, you see why there are disparities."

It would also be helpful to provide a technical and future assistance document. The purpose of this document would be to empower grant writers. Also, in itself, requiring reports is an incentive to focus attention.

Healthy People 2000 Steering Committee Retreat

Breakout Group #4

The overall reporting statement was **"Restructure the categories of Healthy People according to Life Stage or Life Setting to give people the information they want and need. Consider the marketability of Healthy People and the importance of creating the product that meets the demand or crafting the demand to need the product you have."**

- Prioritize by life stages.
- Organize by life spaces.
- Tighten criteria for objectives.
- Reconsider special population targets.
- Communicate Healthy People to the public.

Prioritize by life stage

The first comment was a suggestion to change the name "Healthy People." One man stated that "symbols are very important" and that after ten years, a name should be changed to suit the times. He said that he would move more toward "a 'well-being' kind of model."

The discussion quickly shifted to determining the overarching principles for Healthy People objectives (first task). The group stayed on this topic for quite a while and agreed that Healthy People should be broken down into four or five categories according to life stage or life space-- with the objectives grouped into priority areas within each category. One man stated "I kind of like target groups or a life span, in getting away from [the way the priorities are listed now]. It's not the way things work in real life or in clinics or how services are provided."

Members of the group agreed that the current categories of priority areas do not apply well to "real life." One woman said that "if we just look at the first alternative that's there, which is just combining some of the current priorities, we're really not going to make a big difference... I like the idea of looking at the whole person and, I think if we go into life stages, one there will be more opportunity to do that as well... and another opportunity to cooperate amongst ourselves and outside. And... monitor and achieve progress in health in each one of these areas."

Another woman brought up the point that "if you look at any one of [the current categories]: unintentional injuries or food and drug or health-- all the objectives don't fit in the category they were stuffed into. So all of our objectives aren't health protection objectives. But if you take a life span approach, you could still have cross-cutting work groups that were dealing with the area they knew best, like cancer or oral health." This point was made again when one woman mentioned that "a lot of our objectives are at the very end, like preventing death. And so there is really a stretch to be considered 'prevention' anyway."

A man then added that another benefit to the life stage approach is the ability to narrow down the number of objectives: what "putting it in a life span tends to do, is to really hone in on those things that really make a difference... make impact. And help prioritize." Along these lines, he later added that implementing the life stage approach allowed the "potential to modify risk factors," and examine the data trends and prevalence of different health states within specific populations (or age groups).

During this discussion, one man made an interesting point about the way Healthy People is structured to match the goals of specific agencies, and how structuring Healthy People to fit its various purposes could improve it. He said "I think the way [Healthy People] is structured now is because of the way that Public Health Service is structured and many other agencies. We have Cancer Institute, we have Diabetes Institute, Injury Center. And so you want to have that agency take primary lead responsibility and it makes a lot of sense... In some ways what that turns into is an agency having to defend itself with some kind of dog and pony show about here's what we've done! Whereas when you have the cross-cutting reviews that really nobody is responsible for... it actually fosters a kind of inter-working. So there's something to be said for having it not the way that the Public

Health Service is set up."

Here the facilitator changed the group's focus to the second task of assigning criteria for determining priority areas. The group ascertained that priority areas should include measurable objectives and should be "administratively doable" among various organizations, however, the discussion was centered around the question of using life stages to classify the priority areas and objectives in different groups. One problem the group found in organizing Healthy People in terms of life stages was repetition of the objectives in each of the categories, under different priority areas. As one man put it, some goals such as smoking "go across the whole population."
The group agreed that this would be a problem with a life space categorization as well. One man felt that it was important enough to use life stages or life spaces as organizing principles to increase the accessibility of Healthy People, and he proposed structuring the priorities by degree within each life stage: "the beauty is that it's understandable to virtually everyone. The drawback is that some of these health outcomes occur in each of the life stages unless you pick a particularly tender spot. For instance, cigarette smoking. Its tender spot, where you could have the impact, is primarily adolescence." He explained that by "tender spots" he meant areas where certain issues are more "influence-able... where you as a public health concerned person could influence a change."

From this point the discussion shifted to the difficulty of assessing life stages. The group members had trouble defining adolescence in concrete terms of age or independence, and more than one person objected to, as one woman put it, "putting adolescents and young adults together." There was also discussion about the breadth of the 65 and over age group and the distinction between children and infants.

Organize by life space or setting

The group then considered life space or setting to define Healthy People categories. Life space would denote occupation or relevance of the objectives to a certain population such as for training, in the workplace, or in schools.

The group did not choose between life stages or life settings as determinants for the categories, however they definitely advocated the implementation of one or both of these classifications to simplify and clarify Healthy People. With either system, the group agreed there would have to be one overarching category "that looks at the general global environment that everyone is subject to, regardless of age" or life space.

Reconsider criteria for including objectives

The group tabled this discussion and moved on to address the criteria for inclusion of an objective. The group consulted the sheet of eight criteria in their packets and went down the list. They named credibility, clarifying it as "scientific credibility." Comments turned toward the issue of "measurability" versus "freedom from data constraints" and one very interesting analogy was used to describe the intentions that went into making the list of eight criteria. One man said "I think what they decided back in those days, there were a lot of things that we all agreed were important, but... and we should do them, but we didn't know how to measure them. And we weren't even sure we could measure them. Everyone always tells the story about the man... the drunk looking for his keys under the lamppost. And why are you looking there? Well, I dropped them across the street, but the light is here. And so they wanted to get away from just standing at the light post, but to look for those things, when in fact we didn't have light. With the expectation that we would get there."

The group did not rule out "freedom from data constraints" as an option but the consensus seemed to move toward stricter limits on inclusion of an objective on the basis of its measurability-- "under much more restriction this time than we were the last time." One woman suggested "more integration of data sources" to get the measures done and applied to the objectives.

The group likened "public comprehension" to "understandability" which combines both simplicity in terms of public comprehension, and relevance-- so "the states and localities can reduce the objectives to something relevant to them." Another criterion for inclusion of an objective which the group addressed was responsibility.

One man described responsibility as having to do with the "administrative issues- who's responsible for carrying these out? or who's responsible for not only making progress, but coordinating... seeing it through."

The next criterion was balance. One woman defined balance as "balance between health measures" comparing the structure to a three-legged stool so that there would be a mix of the "outcome measures and the risk measures and the service and protection measures." To this one man responded, "Suppose we didn't think about it in terms of a three-legged stool, but rather some kind of hierarchical tiered approach where you'd have these outcome measures, the mortality and so forth as one set and then all of these implementation things that need to be done. All these process things. All the risk factors... And to do it that way, keeping a smaller number of *hard* objectives. But then being able to track back down and obviously measurability gets considerably less as you move down that line. But at least to have stated them. And then you can also state how measurable they are going to be... or at least how likely you are going to be to make a [sic] assessment."

The group agreed that compatibility between agencies and continuity from year to year were important, but then the discussion returned to the issue of measurability. The idea of tiered objectives resurfaced and one man stated that he would include "freedom from data constraints only if those objectives are described differently from your other objectives... In other words, you have a set of objectives that are tied to data. They are measurable, currently measurable. Trackable.... And you have others that are relatively free from that, but they don't have the same status as your trackable objectives." He added later that "I'm suggesting that if we want to have the criteria of freedom from data constraints, then we don't put all the objectives in the same boat. And we distinguish that those are unlikely to be measured from those that are very likely to be measured.

Special population targets

There followed a discussion about special population targets and whether or not to set objectives according to minority group or sub-population. The group seemed to dislike the notion of setting different sets of objectives for different populations and one man stated that as far as the current structure, "To me there is just a really pristine simplicity to it. To say THESE ARE THE HEALTH OBJECTIVES for the nation. And this is what we want to do. And then when you describe the problem or when you are tracking the problem you'd have, like in your text of each one, these are some groups you want to pay special attention to."

Communicating Healthy People to the public

The issue of communicating Healthy People to the public was key in the group's discussion about overarching principles. The consensus was that the current categories, as one man put it, "are not the kinds of the things that could catch on to people as could life stages." This led the group to consider producing more than one version of Healthy People so that each version could serve a different purpose-- one or more for the public to consult and another for use by health professionals. One man commented, "you could envision... double or triple a level of categorizations that would help <u>us</u> formulate important areas to cover without having to try to figure out now how to tell the world that." Another man said, "whatever goes to the public [should be] simpler than the current structure" and for funding purposes, agencies can arrange priorities according to their specific goals (for a certain age group or life space or disease, etc.).

The group generated the idea of setting Healthy People up on computer to enable people to access the information they wanted using keywords and descriptive terms. One woman stated that "we can make a more interactive, responsive document that is not the same for all people." A man said later that a goal of Healthy People should be to produce a document that "people can access... and get what <u>they</u> want to get out of it."

Healthy People 2000 Steering Committee Retreat

Breakout Group #5

The overall reporting statement was "**less is more, and here is how we could get there**":

- Remove the services and protection objectives from measured objectives and use them as strategies that States and localities could measure, if they chose.
- Prioritize the worst diseases by a priority setting model using disease burden, feasibility and cost of intervention as factors.
- Organize priority areas by life stages or by actual causes of death or behavioral risk factors.
- Report a few objectives in a *USA Today* report card format to inform the public.
- Reword overarching goals.
- Highlight special population targets for the purposes of advocacy.
- Make the document more salable.
- Create different versions of the document for different audiences to shape opinions and create demand.

"Less is more"

Everyone thought the document should be shorter, simpler, and more focused.
One comment on the other side was, "this may not be the best, but if it Anita broke, don't fix it too much. The names are bad... I mean 'health promotion' that sounds... overblown or something. Lets call it something nice, up to date, media-like." His suggestion was to make minor changes in wording.

Remove service and protection objectives

There was general agreement about removing these objectives except as strategies. "They'd be objectives, but they don't have to be tracked." "They could just be recommended strategies." "They could be tracked, if you want to track them... the States can use them, but we don't need to set up a national data test."

One man brought up another way to organize the Healthy People objectives, "Another thing we could recommend along the same lines is to be sure that the health problem has matching risk factors and the health problem has matching strategies. There are some strategies in the book now with no health problem."

Prioritize diseases

The number of priority areas suggested ranged form 12 to 15, however one man said "just because we say we have twelve instead of twenty-two, the same amount of material is going to be in there."
"I would prioritize diseases off the top ten or top twenty."
"I'd rather do it backwards and prioritize the risk factors." "You don't even have to put the diseases under each factor. You could have a separate chapter just talking about all the connections. One suggestion was to use a mathematical priority-setting model including as factors the amount of disability, the intervenability, and the cost of intervention. One person commented "The number one priority is probably going to be along the lines of the leading cause of death."

Organize by life stages

Most of the group were in favor of organizing by life stages: "People can quickly relate to it." and, "You'd get better coordination and integration that way - you can force collaboration." There was also the opinion that the public could grasp it better.

Opposing comments were, "It would be hard to report that way. Too many different players would have to be involved," and, "You'd have to add an overall because too many objectives would be for every single life stage-

- we would be duplicating objectives." Another person said, "Certain things start early, for instance, a child who is five years old and who is overfed will be a fat adult and you can't wait until they're 45 and say 'Now get yourself healthy'."

Organize by actual causes of death or risks --(McGinnis and Foege article)

Many were in favor of this organization. One person said, "a lot of people criticize Healthy People 2000 because it's a menu approach... and it's really not a blueprint for the health of a nation. Something like the actual causes of death is more important." "What really causes death? alcohol, injuries, violence... if you really want to say how you're going to improve the health of the nation..." Another said, "Instead of talking about the leading causes of death, we should be talking about behavioral risk factors."

It was also suggested that a chapter would be needed that covers public health functions--"So we hold the public health community to a standard of excellence."

One contrasting opinion was, "We can't just focus on causes of death... you've got a large population that's growing older-- it's just as important to focus on disabilities."

Reword overarching goals

One man thought the program would be more acceptable politically if it did not include a goal to improve disparities. One man apologized for seeming misanthropic, but said " if you have 'reduced health disparities' as one of your overarching goals, as they found when they tried to put in a national health insurance scheme, and as they found out when they tried to cover prescription drugs for older people, the guys who are currently on top don't relate to that. They say, why should I be interested in reducing health disparities? Its going to come out of my pocket and its not going to help me. Its a great goal but... experience has been that in the last few years in the context of health insurance or getting employers to foot bills, its been hard to sell." Another added, "I think you should get rid of the term disparities. And you simply call it 'special population targets' or 'progress in special problem areas' or whatever."

There were protests from others: "I'd hate to see that go away as a goal, it has to be there." and "I think that really is a core function of public health is to look after populations that are under served, that are not performing as well as the other part of the population."

Special target populations

One suggestion was to extract all of the special target goals and put them into a separate chapter. In answer to that suggestion, another woman said "It's like putting it all over here and don't deal with it... Its good to have them in the area."

Another said, "I don't want to see it too fragmented... It would see to it that the special challenges that lie within some of these priority areas should be highlighted. Almost as an advocacy piece. It gets back to how do we want to use this? And in what ways do we want to make it more visible and more a household word to the American public? ...and for those who can do something about it in their communities. Also keep in mind that by 2010 the special populations will be much larger in proportion to the total population".

Give the document more public appeal

"Think about how a new document could really communicate these issues to not only the American lay public, but professionals out there who don't have the slightest idea." "You might want to go back to what we talked about this morning...what this document is to achieve... then you might want to think about what it is that you can market. That's a very different strategy than what we need to do with public health service agencies... or what needs to be done at the local level in public health service. I'm talking about describing the objectives in a way that they could be marketed.... if you want to sell these things to employers and HMOs and people who are sort of economically driven and who read the *USA Today* and listen to CBS news, you gotta describe it in

ways that are going to get into the *USA Today*. I feel like we don't want to sell Healthy People 2000, we want to sell healthy behaviors...so we can sell these concepts to a managed care plan, saying hey, we have this program that will help your employees eat healthier. ...and by the way, you may be interested to know that there's a national health goal to do that and here's what it is. The interest in Healthy People 2000 will be for the same reason companies now spend more money advertising prescription drugs to the public than they spend advertising to doctors. These guys are interested in what their customers want."

Create Different Versions of the Document for Different Audiences

There was a discussion about the AIDS Clinical Practice Guidelines. "They have one for primary care physicians, one for specialists, and a consumer guide. They're all the same message put out in different ways... I think a similar thing could happen with Healthy People 2000, where you could have a consumer guide." Several others joined in to add to this idea. They suggested working with communications people and including some of the numerical data, as well using graphics as in the *USA Today*, because individuals like to know how they measure up. One man made the point that we are trying to create a public demand to the health care provider. "We've had that on oral health with the dental sealant, that it's the public that's created the demand."

Afternoon Plenary Session

Each small group leader gave a short summary of his/her group. Edited versions of these summaries follow:

- "It's important that the 2010 document come from the ground up and that the ultimate users, that's the public, must be at the planning table from the beginning. Having said that, our group offers the following template as a framework to better communicate HP 2010. The HP 2010 document would have two chapters. Chapter 1 would be entitled, "Life stages" and that would cover everything from pre-birth to old age. And Chapter 2 would be called "Community Health" and that would include core public health issues such as environmental health or food safety. HP 2010 would complement, not necessarily replace, the fine Healthy People 2000 effort."

- "Our group decided that the current organizational structure actually works very well. Although we do feel that it might need minor modifications, we feel that current categorization, you know, has been two decades in the making and... that over 40 states and territories have adopted it as the format for their own Healthy People programs. We do feel that it does need minor modifications, but not a complete remodeling. And a couple of the recommendations I'm just going to mention and some of this is based on... some of you I think were at the meeting last week where there were State and local representatives who presented their views on what they felt was good and not so good about the current Healthy People 2000 objectives. And I would say the majority of them really actually enjoyed the comprehensiveness of the document. That they used it to select what was appropriate and applicable to their needs. And so we wanted to advocate keeping the comprehensiveness of it and also keeping it fluid and flexible so States and locals can select from a larger grouping of objectives. And the only other thing I want to say is that we also felt there needed to be in the development of the objectives a stronger connection with our three primary goals. We discussed greatly that most of the objectives really apply to the first goal which is to increase the span of healthy life. A little bit more so to reducing health disparity, but very little to achieving access to preventive services to all Americans."

- "After a very lively discussion we decided that we think for Healthy People 2010 that the focus should be on health outcomes and risk factors and all of the objectives that we have right now that deal with strategies to achieve these objectives should be dropped as measured objectives. Now that didn't mean that you should drop the strategies. Obviously you need the strategies and people will still be measuring the strategies in different ways. But after a lot of discussion we determined that a lot of objectives that seem to haunt us the most are the ones which mainly fall in services and protection that are actually strategies to achieve some kind of health outcome. So that was our suggestion, that we would drop these as measured objectives, but they would still be strategies. They would be discussed

in the document, but they would not be measured."

- "What we did is give complete discussion to using the life stages, the age categories. We devoted a considerable amount of discussion to those and I think it will ultimately prove to be the one we think we'd choose. However, we also looked at something we phrased as "life settings." That looks at where we can find the population we are looking at a particular time. That could be residences, which would include correctional centers, juvenile justice systems, nursing homes. Wherever you reside. It could be school. It could be workplace. It could also relate to your dealings with the health provider, be it a dentist, a physician. Then when looking at problems such as air pollution and pollution questions, we looked at an over-arching setting of community. What we would do with that is open to discussion right now. But we continue to have much concern about the public perception of Healthy People as it relates to them. This seemed to us to be the best way of keeping it simple. Obviously, I think it was a consensus that 22 priority areas were too many. And we preferred to see them phrased in a much more realistic and user-friendly sort of way."

- "Don't tweak the existing structure too much. Too much effort, dollars, systems, and plans in States are based upon the existing Healthy People systems. We don't want to have the States say of us, 'Oh, it's just like the feds'."

Criteria for Measurability of Objectives

The focus of discussion in the next session was the advantages of limiting the objectives to those that can be measured versus those that are actually being measured.

The advantage of using 'measurable' (versus 'measured') criteria are that more, and a broader range, of objectives can be included, "You could include all things that people thought were really important," and give flexibility in terms of how local entities use them. "There are different ways to get at the same objective. In one community they might decide to do it one way and in another community they might decide to do it another way."

A disadvantage of 'measurable' criteria is that if we put an objective up there, on the hope that it will be measured, the federal agencies continue to feel like they are mandated to find a way to measure it. On the other hand, it can actually lead to the improvement of measurement systems.

As an aside, one member commented, "Sometimes because something is measurable, we think it's doable. For instance, we can measure self-esteem, but we don't know really very much about how to increase it." Another replied that its important to make broad statements about something that people and public health feel strongly about... "you don't want to lose out on addressing important issues that we don't have systems for or that we don't know how to measure." Another added that for some things we can't get comprehensive data, only data from sub-populations, such as for immunization. Having immunization as an objective serves an educational role, it makes a policy statement, holding specific groups accountable.

The advantage of limiting objectives to those that are already being measured by data systems, that you expect to be around for a while, is that you will be able to do this even in times of level or declining budgets. You don't need extra resources to make it happen and, further, you have good baseline data. The number of objectives will be lower and you restrict the number of sub-populations you can use.

One participant suggested having a measurability criterion that the higher and more political levels of the agencies would be held to as well as technical folks. It would allow us to measure progress. It increases the credibility of the objectives and the utility of the objectives for the health care delivery system. "It adds to the knowledge base. You can be sure that over time you will have learned something about how something is changing or not changing or in which direction, whereas if you start out and think you might get something in place and you can't do it... you end up saying, well, you know, I haven't learned anything. I don't know what to do about it and I don't know whether I've even possibly made an impact here or not." Another member added,

"it's not just a matter of a baseline at a point in time, but you have some back data that give you historical trends so that you can tell whether or not even the changes that you are looking at are just secular trends or real changes." Another said, "You can more easily apply cost effectiveness analysis because you've at least got the effectiveness component of the equation in there."

If you have an objective that depends on a data system, it is going to encourage people to improve the data system because it's got an objective associated with it. If they're measured at the national level, that increases the likelihood that they will be at least measurable at the State and local level. At minimum there is a template and there may actually be data. It can help you generate objectives a little bit more creatively if you really start to mine the data that are already there.

One advantage of 'measured' is that the pinch of realizing that you can't put an objective in could lead to the creation of objectives which would be measurable and lead to questions about whether or not there were data systems in place.

Another woman replied, "Considering the kind of energy that has gone into attempts, multiple attempts to get data, I want to throw out one possible advantage... if you limit yourselves to objectives that you know can be measured, the energy of the federal agencies can go into trying to achieve progress on those objectives rather than trying to find data for those objectives. So ... that's a different way to look at it."

In summary, the participants felt that the advantage of including 'measured' criteria is that it motivates the building as well as the improving of data systems. Many people were comfortable with the idea that there would be at least some objectives that would speak to the development of data systems to collect information on things we can't collect now.

Making sure that you have objectives for which there are data means that you have data today. It means that you're likely to set more realistic targets for where you want to go because you actually know where you are today.

Another comment was a caution not to assume that we will have the data for problems that don't exist yet. In 1980, it was not even known that there was a such a thing as HIV, let alone what kind of impact it was going to have or how they could measure it. In thinking about HIV, another comment was, "requiring that the objective be measured may lead to advocacy on the part of external interest groups for improved measurement... as opposed to just putting the objective in.

One man said, "the advantage is that [requiring the objectives to be measured] follows the philosophy of the whole process. Management by objective calls for rules and measurable objectives. And that's the philosophy of the whole system, the theoretical background for this process. Now, I think one of the things that maybe we deluded ourselves in was in having only three goals. In a sense we're talking about leaving certain things out because we don't have measures. We could have had more goals or some sub-goals. For example, a major goal or policy issue in HIV is to reduce the incidence of HIV. That can be a goal. One goal might be reduced HIV infection. Well, we can't measure that! So you have an objective about what can be measured. The things that you can't measure can be stated more broadly in terms of policy wishes as a goal which you have no intention of measuring because you can't measure it. We would set up a system with a few more goals and some sub-goals and then still keep true objectives as measurable."

The moderator, speaking to one of the participants, said "you used the term 'policy statements' earlier. Is that what you mean? That you can make a distinction between goal statements that do not have these stringent measurement criteria around them versus objective statements that do have these stringent measurement criteria around them. And that's one definition of what an objective is... that it's one or multiple ways to operationalize and measure a goal."

There followed a brief conversation about serving the needs of the States and about using new technology. It was suggested that new technology would allow a system in which there can be, in a sense, multiple alternative frameworks and architectures that someone can essentially design for themselves, if the data base

is structured appropriately. One could search on age, on place, on risk factor, on population, disease, and on anything else. Many participants of the Retreat talked about the fact that the structure and the dissemination, especially, of Healthy People 2010 should take full advantage of the fact that our communications technology has changed dramatically.

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APPENDIX B

SUMMARIES OF SEVEN HEALTHY PEOPLE 2000 CONSORTIUM FOCUS GROUPS

Consortium Pilot Group

The first group of Consortium members was held in Bethesda, Maryland, in October, 1997. The purpose of this group was to test the moderator's guide for relevance and timing before the New York meeting. Most members contacted agreed to attend, even those who had to travel to attend. The nine participants represented national professional associations, one State health department, and national public health associations.

First we asked about involvement in Healthy People 2000. Some of the participants had little awareness or involvement in Healthy People, a few because they were new Consortium members or new in their organizations. Others were more involved. One participant had worked on the development of the original document and a State representative used the document as a model for her State's Healthy People document.

The first topic to emerge was the trend toward performance and outcome measures. Participants complained that they did not have enough information about the outcomes of process measures, especially at the local or community levels. They hoped Healthy People 2010 would help frame these data. There was also a discussion of national data and national standards. It was agreed that it was necessary to have national data and that States wanted something to compare their data with; however, it was also stressed that national data does not account for the large differences in localities. More flexibility at the State or local level in the actual objectives and measures was suggested. An example given was an objective for low birth weight babies that would not be appropriate in a Native American community where the problem was overly large babies. The State representative reported that her State reviewed Healthy People 2000 but rejected or changed many objectives because the State was already doing better, the objective was not achievable, or the objective was not relevant.

One participant raised the question of whether or not the measures contained in Healthy People 2000 are all meaningful in the sense of being science-based. Another pointed out that Healthy People moved in the direction of using process or intermediate indicators that were beneficial because they provided direction. She pointed out that it is not possible to measure long-term goals. Another cautioned that some of the process measures were not based on enough information and might not be worth achieving. Additionally, process measures might be very different for different localities. For instance, the number of bike trails as a measure would be meaningless in a rural community. This led to the question of whether an appropriate measure should be the number of bike trails or the number of persons using them, highlighting again the need for objectives to work well as performance measures that are outcome oriented.

One participant complained that Healthy People 2000 "did not inform policy decisions" at the State or federal level. It would be helpful if health service agencies would use Healthy People to write their announcements but Congress tells them that grants come before reference to documents.

Participants wanted to know if managed care groups have been involved and if Healthy People has been shared with insurers and other clinical agencies. One pointed out that, "Public Health is the best kept secret. We need buy-in and investment from purchasers, drug companies, and hospitals." Another said that the document acts like a catalyst to draw people in, for infant mortality, for instance, which will need partnerships. Often, though, it is not clear how to achieve targets.

Concern was expressed about the lack of data for some objectives. One person said, "We don't have the right information to make decisions about what is worth measuring." All agreed that it would be good for the document to stay as science-based as possible. "We shouldn't have measures for things until we're sure they're helpful. " Also, there should be a separate category for objectives that are not measurable. "They might be laudatory for long range goals or to set priorities for data collection, but they should be in a separate category."

One participant pointed out that by 2010 we will be more international. We might want to know how other parts of the world are doing tracking public health objectives. We should make our objectives compatible. On the other hand, internationalism might be not be good politically in this country. One man thought we should take a look at the ten PAHO goals. Another said, "if you consolidate it, you'll just have longer chapters."

On the of topic life stage organization, one person said, "they scare me because people could ignore all but one category." Another suggested that it all be available on line so it could be organized in many ways. They said we should not just think about the paper document but that we should be able to track from document to document from 2000 to 2010. One participant cautioned against throwing out what is being used because there is too much investment and not enough problems. Participants also pointed out that there needs to be compatibility in measurement. "NCHS [the National Center for Health Statistics] tracks something different from Healthy People 2000."

When asked to comment on whether the number of objectives and priority areas should be added to or cut, the answers were as follows:

1. Added to
2. Added to
3. Don't know
4. Pass
5. Form follows function. What are we using it for? If for reporting, then there should be less.
6. What are we using it for?
7. How is it being used?
8. For the State health big picture, less. But for program areas, more.
9. We need local version. We need a multi-level document.

THURSDAY GROUP November 14, 1997

This group was the first of five conducted in New York City before, during and after the Consortium meeting, and was comprised of health professional organizations, State Health Department staff, community organizations, and disease-specific organizations.

In general, uses made of Healthy People 2000 varied by the type of organization. For issue-specific or disease-specific national organizations, the document was used to call attention to specific objectives. By States, Healthy People was used to talk to other organizations and as a "centerpiece for the big picture." A State representative said that in a major drive to develop measures for surveillance, it was used to look for data gaps, especially for minorities. The three goals were also used as a communication tool "to develop a common vision." Another said that it was used for speeches but not used much as a consensus document because it did not fit the State's need to track its own data. Most agreed that it was a useful base for communication intended to begin new partnerships.

Specifically, several participants mentioned reference to the document in federal grants and as a policy tool. It is also being used as a teaching tool in universities. One significant purpose was discussed, that the document was used to reestablish a dental prevention program in New York City. It was also mentioned that a successful partnership with Colgate was inspired by Healthy People 2000.

A representative of a health care professional organization said that he was concerned that it was 'not a living document' in that it was not integrated into practices due mostly to inertia of the systems such as corporate settings and health care payment obstacles. A representative of another association said that it was actually used in setting up practices for nurse practitioners.

A State representative, discussing the limitations of the document said that in public and private partnerships, it "has so much potential but it doesn't push you to action."

A business/health group surveyed its members for program interests and found that members were not influenced by the document. He said, "we have to put on a better road show, one that is more compelling to business, or, at least, find vocabulary more compelling to business," such as discussing not just health, but productivity. They thought the document failed to speak to large insurers because it does not make the case that healthy workers and families mean more productivity. "There needs to be a link to existing scorecards like HEDIS... When businesses go to insurers, it could help them ask, "What are we getting for our money?"

Public Health staff find one of the benefits of the document lies in the training of new employees about public health. A State person said, "I like the methodology, the three goals are basic to good planning... [reading it] gave me broad perspective on public health... It's a very rich document." The document can be used for many purposes, and that is one of its strengths.

A State representative said that Healthy People is a good tool but it has limitations for States because its programs are narrow and deep. The State needs breadth to cover everything in the State health departments: "Some departments felt left out." Missing areas were the laboratories, the medical examiner's offices, substance abuse and mental health divisions, and Medicaid.

Another observed limitation of Healthy People 2000 was the need for more emphasis on environmental health. The objectives are sometimes not on target or do not exist at a local level. One participant stated that there need to be more built in to link the local environment with the objectives to get cooperation from communities. Also, we need to pay attention to language and concepts that are appropriate for the community and to add process pieces. Another participant alleged that 'health promotion' sounds condescending; "You don't have to sell health."

Another agreed, 'the language is insular to the health field.' Some of the groups we are trying to reach cannot relate to the language. "We need technical assistance at the national level to translate to people we're trying to reach." There was general agreement on this point. An association member added, "It's still very disease-

oriented, not geared to health promotion." She suggested organization by the framework of "leading causes of death" presented by McGinnis and Foege. She also suggested using more graphics showing targets to improve.

There was some discussion about community involvement and how communities can come up with their own indicators and asset maps. Achieving this could require another document for laypersons which would help the local community set goals. One person noted that the "Put Prevention Into Practice Program" created patient-based books that would be good, or a workbook. The public health professional added that the document should be more sensitive to what is happening in the community.

A State person brought up that what is missing from the document is "health services research, which is an important part of the Health Department." She was also concerned that Healthy People will be used for funding and wondered how it would relate to Performance Partnerships. She had a "vision of jockeying for position." She wished that the document would cover all areas of the Health Department and that Healthy People would be broadened so it could be used on measures for Performance Partnership. Another State person added that it would be nice to have a living document that projects changes over time - an Internet Document Workbook, "broader but not so deep."

A topic-specific association representative responded that they need the depth of objectives; she stated, "It's valuable to have our two objectives spelled out." She also cautioned that there must be a limit to business partnerships. She stated as an example having infant formula manufacturers setting themselves up as educators for new mothers. She also said that we need to remember that some objectives do not make money and do not offer economic advantage to business. She said, "this is a government and public health document."

In a discussion of reorganization of the document, the AHCPR Guidelines were mentioned because they have a version for patient, provider, and administrator. Perhaps Healthy People could follow that model.

The community agency representative said, "broader wouldn't do us any good, we want breadth and depth." Data could be collected at the smallest level and aggregated. "It could be a multilevel, Internet document so we wouldn't be overwhelmed with a book this thick." Another added that the document could be on the Internet but supported by hard copy. One participant suggested making it a "living document" with graphics. Others thought it should have uplinks and a catalogue because "some things cross objectives."

When the moderator asked, "Is no one anxious to cut the document?," the response was, "It depends on the reason. I love the document because it speaks to a wide audience The only reason to cut it would be if CDC requires us to report on all these objectives." A community organization representative replied, "each year it grows may mean objectives so specific that it doesn't meet community needs. It could keep getting bigger and bigger. How much information can people handle?" Another said, "who would want to cut the document? "States can set their own priorities -- as long as an Agency doesn't require reporting."

One State Health Department representative stated, "Specific detailed objectives promote narrow minded, categorical thinking. We try to pull them together so we're not going off in different directions. And what about housing and poverty? We need it to be more inclusive of a broad range of topics but not so specific." Another added, "Small indicators encourage turf battles between groups at a local level."

One member thought that since the Prevention Task Force is organized by life stages, it might be an advantage for Healthy People to be in parallel. Another thought the organization by life stages "creates a sense of overall health instead of health fiefdoms."

An opposing view was that, although life stages is a good way to organize Healthy People, considering the demographics of the country, it might pit one age group against another. Another asked, "Shouldn't it bring the issue (demographics) out into the open? It does change the economics of health care." "Public health is about keeping people healthy. We would want to see a summary, like for environmental health, which cuts across but could be aggregated by computer. We want both!" From a community point of view, participants thought

life stages may be more meaningful. The Healthy Communities Initiative focuses on adolescents, for instance.

The following are short statements made by each participant when asked if changes to the document for 2010 should be major or minor.

1. Minor - There should be multiple ways of looking at information. Don't lose the quality -- add to it.
2. Keep it the way it is -- with depth -- and cross-reference it.
3. The categories (priority areas) do not make sense. There is a combination of risk factors and diseases and data collection. I should be changed without losing momentum. We need to continue together.
4. There should only be a minor tweaking, but a major overhaul in the overall layout and structure. We could add benefits but not lose quality, like adding life span organization with a toggle switch.
5. Major overhaul. Categories don't work. They're like apples and oranges. Don't lose what's there but make it more meaningful to the community, such as organization by life stages.
6. It needs a major overhaul in presentation. There should be a CD ROM and a Workbook and other useful organization like life stages.
7. The life stage organization is good but it needs better links, for instance, calcium in youth for hip fractures in later life. It needs high tech features.
8. We have to remember that not everyone has Internet. We also need reporting back to see what we have accomplished. Life stages is a good way of organizing.
9. There should be only minor tweaking for continuity. I like life stages, love linkage (to school health, for instance). The goals should be revisited. They need buy-in from the community and businesses.

Additional comments were that the goals should not hope to increase 'life span' but more 'quality' of life and that public/private partnerships should be limited. "We need to protect 'public' and not get caught in a profit motive. Profit doesn't always have quality of life as a goal. Another replied that there is a private drug company that has found a way to reduce hip fractures 50% and another has developed a bone density test. There has to be a balance. The question is, where do the ethical pieces fit in the document? What are the ethics?

FRIDAY MORNING November 15, 1996

The seven participants of this group were association members, and State agency perspectives were not included. In general, they used the document as a policy and planning tool to formulate and justify the goals of their organizations. In a discussion of the changes to the document, the first topic was language. One participant said, "we need more consumer buy-in and partnership with providers. The document needs to be more user-friendly -- this is an overwhelming volume. The document is not targeted at individuals but at organizations. Maybe we should redirect the target audience."

One participant suggested that there needs to be two versions of Healthy People, one for States and Organizations, another for the patient, consumer, or citizen. The AHCPR Guidelines have three versions: 1.large, 2. scaled down, and, 3. a patient pamphlet. Someone else pointed out that "agencies are also consumers. The document put us on the same page. We deal with competing interests. "Its good when we can have a shared agenda."

Another said, "It hasn't quite worked for us. The remedy is not simply to get more objectives in our area, although we need them; Healthy People 2000 doesn't tell us **how** to get to objectives. What are the activities? That's why Put Prevention into Practice is so popular. People want tools."

Participants thought the document should be indexed by keyword, on-line or CD ROM. Some participants felt there were too many objectives. One said, "management courses say that more than six or seven objectives is too many. It needs to be prioritized."

Another topic discussed was the need for testing interventions. One person said that they needed funding to test consumer interventions for outcomes and that perhaps Consortium organizations should form partnerships. "Healthy People needs to be more of a household word. Of 100 people picked at random outside, I'll bet no one would know what it is."

One participant suggested, "Maybe HMOs should be judged by comparison to Healthy People 2000". One participant said that like nutrition labels, it should be marketed in a positive way. "When they were alone, public health did it all. Now we need buy-in from managed care." Another pointed out that if consumers are aware, they demand services from providers.

Another woman had a contrasting opinion, she said, "I'm troubled, I'm not sure why the public needs the bigger picture. I'm not sure a national health agenda is understandable to the public."

On the topic of goals, one participant said that the document needs consumer friendly goals: For instance: 1. Help you live a longer life, and 2. Make your extra years quality years.

Participants of this group thought the language should be less academic and that maybe there should be just one goal. Another objected that the goal of population disparities is critical and they relate to populations, not individuals. Another said that support for this goal (population disparities) "won't get you much from individuals but specifics like access to health care might."

One man said he would not want to remove any priority areas but the four broad categories were odd and did not make sense. He suggested that maybe we need infrastructure objectives such as water, air, etc. for each community. He worried that "public health functions are crossing over into managed care." Another said she was afraid we would not be able to measure the same things because of managed care.

One participant thought that the objectives do not meet the criteria for being realistic. She stated also that there needs to be another criterion added, 'responsibility,' or who should be engaged in participation. Accountability should be assigned to a more inclusive group. One person suggested that since each provider ought to be accountable, maybe other Consortium members like provider associations should be brought in with the lead agency so it is not just the Feds.

One question raised was, "Sometimes a prevention objective is really treatment. Where do you draw the line?" Measurability needs to be quantified with the cost/benefit of prevention. We need to be able to ask for financial help. Instead of a laundry list, we need partners. Part of marketing includes the financial benefit. Another viewpoint was that we should not throw out objectives because we do not have data. One participant asked if Healthy People 2000 resulted in a shift of dollars from treatment to prevention. If no, what would it take?

Another said that health policy analysts are beginning to be heard about the cost effectiveness of prevention and that some of the demand for prevention is consumer driven. "We have no measure of relative importance of prevention in the cost to society and the numbers affected. It needs to be made explicit." One participant pointed out that HEDIS spelled out how to measure – and Healthy People should do that. We need to think concretely.

Participants wondered how they would be involved in developing 2010 and wondered who sets the priorities.

When asked about whether the document requires a major or minor change, participants made the following brief Statements:

1.It needs only minor tweaking because of past in-between tweaking.
2 I'll second that- but more process issues would get more buy-in
3. It doesn't need a major overhaul, just readjust the categories for this decade.
4. Not enough mistakes were made for a major overhaul.
5. Minor, It doesn't need a paradigm shift.
6. The content is excellent. It needs to be repackaged for new groups. The process should be consensus based.
7. The context has changed. The process should look at the health care changes.

FRIDAY AFTERNOON GROUP I - NOVEMBER 15, 1997

The group was made up of nine participants, including associations and State representatives. When asked about the uses of the document, some said they had not used the document at all. Another said his State had taken the process to develop its own document. Another person's organization takes the goals and works them into its implementation plans.

One State has 67 objectives in its document (120 total with special populations). Some objectives are the same as Healthy People 2000 and some are not.

Another State used the document extensively for collaboration between divisions and to create partnerships. This representative said, "We never want to let go of Healthy People 2000. We are looking to it as a standard."

When asked how the document could be more useful, one participant suggested putting it in a data base format for search and manipulation because it is cumbersome. Another person said, "Specific communities have to select what is important to them. Since it is difficult to find things the way its organized now, perhaps it should be just headlines, then left to locals to fill in."

The document emphasizes birth and death data. One person said, "That's only two points in life. There are other data sets about health status: trauma, cancer, registries, Behavior Risk Factors Surveillance System, and discharge data."

One participant thought that for objectives where there are no data, they should be very rigorous so, if it's not planned in two years, it's not included. "There should be two kinds of objectives: 1. measurable, like HEDIS, and 2. Important but optional, in need of further testing."

Another participant said, "I'd like to see increased discussion about different settings and who might be encouraged to take responsibility. For instance, what could a school setting do? I wish they could plan this in advance as separate documents or parts of documents."

It was pointed out that the document does not deal with systems of care for some populations, for instance, the incarcerated are not included. One participant felt that, because it is public health, there should be linkages with social milieu and information from social service agencies. "We don't need to add more objectives, just look at roots of the ones we have. There aren't that many causative areas." Another member said of the three goals, "preventing premature death measured by years of potential life lost is not addressed."

The topic of comparability of measurement elicited a discussion about Performance Partner Grants, The Uniform Data Set, and other systems that have different measures. "Is there any way these data sets can be combined? We can't take on more reporting." Another suggested, "Even more broadly -- combine government, private sector, Medicaid, and HEDIS. It's critical to get these combinations. I wonder if Healthy People 2000 is intimately involved with NCQA. Of course, the population is different but, as the population is moving into managed care, the difference is blurring. Wouldn't it be wonderful if there was one system to measure health and HMOs and everyone had to use the same ones?"

Another disagreed, "Even if federal requirements could be combined,
Healthy People 2000 must remain population based. There is a large number of uninsured people. That could be a mission for the US Department of Health -- for them to be responsible for standards and data collection and uniform outcomes. They shouldn't be timid about how to implement, to make everybody come into line."

One member said, "There are three types of objectives: health status, risk, and process. I'd like behaviors to be separate from health status. There should be separate outcomes". Another suggested, "Maybe change the word from data to evidence" We do not have enough data to say most things - the way AHCPR gathers evidence around guidelines." Several members agreed that it would be very helpful to have a Statement of purpose of the document.

On the topic of organization of the document, one member said, "The categories don't make sense. Its an eclectic model. Some specific disorders are mentioned, and some are not. Either diseases should be added or disease categories should not be used. Maybe characterize by etiology."

About the size of the document, one member thought that having 300 objectives has allowed States to pick and choose. He was not uncomfortable with the large number of objectives, feeling that is part of the value of the document; however, he thought that having a top three objectives would be good and that objectives should only go away if accomplished. "If they were important for two decades, they're probably important now."

Most States have a more broad based document that is not as categorical as Healthy People 2000. Some thought education should be a major category and that Public Health Infrastructure should be a major category.

Many thought that life stages would be the best system of organizing the Healthy People document. They thought that the PAHO Goals are more inclusive but more general than ours and too vague.

On the topic of life stages, one participant said, "I'm not comfortable dividing human beings by anything, including age. Too many items overlap." Another countered with the comment that with the life stages, "there would be greater specificity in how to meet goals and that is very important."

When asked if the document needs major or minor changes, participants said,

1. Minor - let people reorganize for themselves. The guts of it are good stuff. We should look at those objectives where we have been going backward.
2. Minor - there are advantages of life stages - we get hung up on programs and no one coordinates for target groups.
3. Minor - We can't spend too much time and money on busywork but we do need to make it more user-friendly.
4. Our goals get lost . When we emphasize health promotion, we increase marginalization of some groups. We need to emphasize our goals.
5. All objectives should fit under goals. We could lose categories. Keep objectives as stable as possible. If we've spent two decades gathering data, this is the longest we've sustained continuity of effort. I'm less concerned about organization.
6. Minor change because of continuity.
7. Content - minor, organization - major.
8. Minor for continuity - Add categories
9. We need a stronger philosophical emphasis on goals.
10. The focus is too much on public health professionals but it needs translation for consumers. Maybe Spiritual Health should be added or the faith organizations should be included as partners.

FRIDAY AFTERNOON GROUP II - November 15, 1997

This group was made up of nine Consortium members all of whom were association representatives, most of whom were associations of health professionals. When asked about the uses of the document, one physician said that most of his members do not have the document "it's gigantic." Another said that they did a workbook to make their objectives useful. They added a chapter on coalition building organized like Healthy People 2000 but added strategies to achieve objectives. For maternal and child health there is no choice. The Maternal and Child Block grant requires it. She added that the National Child Health Indicators are being developed and she hoped they overlap with Healthy People 2000.

For college health, a new document was developed, "Healthy Campuses 2000" that was "a translation of Healthy People." They picked 133 objectives and included ways to implement them. She felt that Healthy People was a "living document" mostly because ODPHP had interacted with them in developing their document.

One member said that the document has too many objectives and priority areas. It needs to come from three areas only. Another countered that "four objectives may affect my area and four may affect yours. I'd hate to see it shorter, to exclude anything."

When asked why there was a need for translation, one participant said, "we are interested in only two objectives, not the whole book." Another said, "What's missing is how to make it useful. We need to know where we are nationally... In the whole book, it's hard to find things. We can put our things together."

On the topic of the size of the document, one person said, "Size is not a problem, we need the data. Most data are not available -- our members spend time trying to get data." One participant stated, "In terms of health services research, it can be complicated and most people do not have an MPH. We need the research done scientifically but then we need to simplify and explain it. A layperson's guide would have been good. Primary care and good clinical practice could have been lumped together."

Several participants thought that current categories (priority areas) reinforce the categorical approach and that cross-referencing does not help if it is not apparent how to do the program.

One participant emphasized that we need to highlight the effect of poverty on health status and that Healthy People objectives are long term. One participant added that 'poverty' is never mentioned. It affects a lot of objectives such as chronic disease; access to care, education, mental health, mental retardation, environmental health. Goal number four should be Healthy Environments (including the social problems in prevention). Goals should include health disparities or access. Also, we should ask people what <u>they</u> think is a healthy life. One said, "I wonder if their agenda would be the same. The public has a choice not to live healthy." Another added, "It's all about wording, i.e. Do you want screening 'done' or 'offered'? What about the patient's choice? Consider smoking, for instance - do we want to change the norms in our culture? Intermediate process indicators would solve this. Process is the key." The goal should be to support the environment to change behavior.

Another added that the criteria of public comprehensibility is not met. Goals could be broken down by Public, Provider, Agency and Society. There could be new categories such as sexual health that show the factors leading to outcomes, for instance, alcohol leading to STDs. The document could make the linkages across linkages and objectives.

One participant had the following view: "We should not separate clinical one on one based medicine and community based medicine. The current categories allow us to focus on medical based health care but both needs should be met. There should also be surveillance in both." Another said, "Life stages makes the most sense because it relates to **people**. You could add access issues to both, for instance, health expectancy for an infant. The Prevention Services Task Force has done that."

One association representative said, "I use my five pages and check national data. I don't want it by different ages. To me it seems like busy work to reorganize; it seems silly. We pull out what we want." Someone else added that health behavior surveys like the National Health Interview Survey (NHIS) are broken down by ages. Another added that half of the State government health departments are organized by life stages and are changing to functional units and the other half are changing in the other direction.

One problem that was identified about life stages is the "pitting of ages against each other, such as children against mothers. These are political interest groups." Another said, "I feel as if I'm pitted against twenty one other priority areas. We need to consider how we can make the best use of resources and identify the commonalties. Common to most priority areas is a need for environmental change, social change, and behavioral change. If we're not forced to see the big picture, we won't." Someone else said, "maybe we shouldn't be working together, I can't do all these things."

Another said, "We all do our own thing to keep our grant money. Until we get together and see linkages, we'll never change the environment". Another participant added that we need to look at the whole community or the whole person. Healthy People 2010 should be about people not about diseases. Life stages would help with an integrated community based effort. He said, "You want people to use it, such as businesses, insurers, and others who are in control of communities."

On the topic of goals, one member said "maybe we should spend more time looking at the goals as a nation. Let people formulate their own objectives. Leave the objectives up to the communities. We've lost sight of the goals. We also need clearly stated outcomes." Another suggested that maybe the goal should be setting up community coalitions. The community might have goals that are different from national goals.

When asked if there should be major or minor changes, participants said:

1. Needs bigger vision, community coalitions
2. Minor reworking
3. Minor. It's a very useful document.
4. Just tweaking
5. Minor But it can't ignore access and social issues, can't separate these from health.
6. It needs modification but keep it mostly the same to track trends. It needs to be more user-friendly. Keep objectives detailed, develop second set and reorganize.
7. The document works well for health professionals. It needs a marketing piece for communities. How would you go about creating a healthy community? This might provide basis to measure it.
8. Borrow from Healthy Cities 2000 which is great or coalition building
9. Reorganize under life stages for marketing. Put an emphasis on how to collect missing data.

HMO/PURCHASERS GROUP - JANUARY 1997

This group included seven participants who described their involvement with Healthy People 2000 and what they see as its purpose. One participant represented a large corporation which purchases insurance for forty thousand employees and retirees. As the Employee Health Director in charge of a broad array of activities, he used Healthy People for their Wellness Project, as a guide. He said he "culled through the objectives" to find the ones relevant to a working population. The value of Healthy People 2000 to him was that it provides a scientific base. He said no one organization would have been able to do it.

Another participant was from an organization representing health care professional organizations, a government agency, and businesses which focuses on patient information. Two objectives were the basis of their work. This organization, which has an action plan to define "useful guidelines" for consumer information, coordinates private sector efforts to meet Healthy People 2000 goals.

The national organization of businesses represents the "purchaser perspective" of Fortune 500 Companies. An organization representative who attended the focus group said that they are trying to "make the link between health care and productivity" and to "make the business case" for choosing prevention benefits.

She felt that Healthy People 2000 broadens the focus to health promotion and is a boost to the "integrative approach." With global competition, the value and cost of health services are becoming increasingly important. Until now, health promotion and disease prevention were an "unproved product."

Participants agreed that the document "legitimizes" issues in public health and shows that there are more issues than just smoking and car seats. They feel it is important to have the entire document. "It's a voice for public health that keeps us speaking the same language." The terms it uses become the currency and the framework.

An association of health plans represents managed care organizations. Their representative made the point that the health plans are now more influenced by HEDIS but that there is some overlap with Healthy People 2000.

A quality director for one of the largest health plans said that Healthy People 2000 has had an impact. The tie in to HEDIS has been helpful. He felt that the size of the document is also its weakness. With so many objectives, "what is the public message?"

When asked who owns the objectives, one participant answered that it has happened that advocacy groups own their own objectives and it's hard to get them interested in others. Another answer was "everyone and no one" meaning that the document does not specify consistent priorities, follow-through, and accountability. "Who is responsible?"

Another participant pointed out that there is a disconnect between advocacy groups and federal lead agencies. The advocacy groups are not necessarily included. Another participant added that HCFA hadn't been involved until last year. Considering such things as Medicare coverage for flu vaccines, payers need to be more involved now.

When considering the opportunities provided to organizations by HEALTHY PEOPLE 2000, the corporation representative said that earlier versions have been too reliant on mortality statistics. There has been nothing about missed work. Employers say providers are not sensitive to functional outcomes. They are most interested in short term outcomes. Another issue is risk. Providers do not want to be responsible for socially caused problems. Many questions are being raised: Who is responsible? The provider, the employer, the individual? What is fair? What are the roles and what are the incentives? Accountability entails risk.

The health plan representative said that he saw an opportunity for education as an outcome. They were looking for behavioral interventions and could not find intermediate outcomes such as change in practice patterns. The health plan association representative said she did not think policy about process steps was

appropriate at a national level.

Another issue raised was the timeliness and relevance of the data. Health plans have a different population than the NHIS and other data bases used in Healthy People.

Participants thought that employers can contribute an emphasis on functional outcomes. The problem is that with so many goals and so many actors, it is difficult to know how to form partnerships. It is also difficult to know where to have impact; what will pay off? Employers want to be at the table but do not know which table. All agree, though, that Healthy People 2010 must be relevant to purchasers.

On the topic of the framework for Healthy People 2010, participants suggested that it have a "testing set" like HEDIS for unmeasured objectives. They also suggested that the bar be higher for healthy workers and that the document be put on CD ROM so that different targets could be addressed and there could be different versions. The first question should be, "How does it become relevant to purchasers?"

The health plan representative said he would like to see a "core set" where we want to spend money and resources. In the same way that HEDIS measures have influenced health plans' goals, Healthy People might also have an influence, if there were a limited number of serious priorities.

Another participant said she thought that Healthy People 2000 tried to do the States' work and that perhaps the document should be a workbook with overarching goals but objectives filled in by States or communities. Maybe localities should be shown how to prioritize.

Following a discussion of how many priorities there should be, one participant expressed the opinion that there is some value in having "political cover" by covering many areas. She suggested 20 priority areas. Another suggested having five priority areas with national data which can be customized at a local level.

The business/purchaser representative said there should be employer support for healthy communities, suggesting the Healthy People could make the case that healthy communities lead to healthy workers. She said, "you can benchmark if there are few priorities and you can mobilize resources.

Also on the topic of organization, participants felt that life stages was a good way to organize because it would be easier to mobilize people. On the topic of the criteria for inclusion of objectives, participants felt that the "ability to assign responsibility" was important to emphasize. Another issue was that criteria be evidence based or at least have tiers of evidence. Finally, economic impact needs to be emphasized. Healthy People 2010 needs to quantify the impact of doing nothing.

APPENDIX C

STEERING COMMITTEE RETREAT AGENDA, and CONSORTIUM FOCUS GROUP MODERATOR'S GUIDES

AGENDA:
HEALTHY PEOPLE 2000 STEERING COMMITTEE RETREAT

8:30-8:45: Welcome -- Earl Fox
Seque intro of Shoshanna Sofaer as facilitator for the day

8:45-9:00: Introduction of Staff and Overview of the Day -- Shoshanna Sofaer

9:00-10:15: Plenary Session: The Value and Functions of HP Objectives: Current and Future

Brainstorming Session; facilitated by Ssofaer

* review rules for brainstorming -- 5 minutes
* cover following key questions: -- 40 minutes
* Why do we have these objectives? What is their critical value and role?
* To date, what specific functions have the objectives served well?
* To date, what specific functions do the objectives need work to serve well?

Brief Presentation of Major Changes in Health and Health Care that could influence the value and function of the HP Objectives: S Sofaer (who asks at the end -- any additions or changes or deletions) -- 10 minutes

Return to Brainstorming: 20 minutes

* What new functions must Healthy People objectives serve, given these changes?
* What functions of Healthy People objectives are no longer as important, if any?

10:15-10:30: BREAK

10:30-11:00: Plenary Session: Who Should be Involved in Developing and Using Healthy People Objectives?

Return to Brainstorming:

* Are These Objectives for the Public Health Service or for the Health of the Public?
* Who are the Current Active Stakeholders?
* Who Needs to Become a More Active Stakeholder? Why?
* Who Has Been Overly Dominant? Why?

11:00-11:10: Instructions for Breakout Sessions

11:10-Noon: First Part of Breakout Sessions

Noon - 1:00: LUNCH

1:00 - 2:00: Second Part of Breakout Sessions

Design of Breakout Session:

Focus: Develop Options for Re-structuring the Healthy People Framework

Group has an assigned facilitator who convenes, explains instructions, watchs process, keeps time, handles tape recorder

Start with round robin intros -- very brief -- 5 minutes

Group should identify, at the outset, a recorder/reporter (must not be an ODPHP person) -- 5 minutes

Group Tasks:

1. Identify and discuss at least two overarching organizing principles for the objectives (e.g. the current categories; a life stage approach; priority health problems; a "sector" approach) -- 20 minutes

2. Address the following questions:

   * How many priority areas should be selected? -- Group discussion -- 20 minutes

AFTER LUNCH:

   * What criteria should be used in determining priority areas? -- nominal group process plus discussion -- 25 minutes

   * How many objectives within each priority area? -- Group Discussion -- 10 minutes

   * What criteria should be used for inclusion of an objective? (Not including measurability issues) -- nominal group process -- 25 minutes

   * What is the best way to address differentials across populations? -- 20 minutes

3. Wrap up to identify single key message for report back -- 10 minutes

2:30-2:45: BREAK

2:45-3:00: Return to Plenary Session: Brief Report Backs from Groups

3:00-3:45: Plenary Session: Data Requirements for a Well-Functioning System of Healthy People Objectives

Brainstorming Session:

   * What are the advantages of using fairly **liberal** data requirements for inclusion of objectives?

   * What are the advantages of using fairly **strict** data requirements for inclusion of objectives?

3:45-4:00: Wrap-up, Preview of Focus Groups and Thanks

HEALTHY PEOPLE 2000 CONSORTIUM FOCUS GROUP MODERATOR'S GUIDE
PILOT - WASHINGTON, D.C. AREA - OCTOBER, 1996

INTRO
My name is Barbara Kreling. I am part of a group at GW which is helping the Healthy People 2000 Program staff gather opinions from Steering Committee members and Consortium Members about the Healthy People 200 Framework. We are going to be conducting focus groups with approximately 80 Consortium members in November in New York City .

Please introduce yourselves and briefly tell us how you are involved with Healthy People.

ELAPSED TIME 15 MINUTES

- Thank you all for coming and helping us with our intitial effort to get the opinions of Consortium members about the development of Healthy People 2010.
- We'll meet for 2 hours with a break in the middle. Please help yourselves to refreshments.
- This meeting is being video taped and observed from behind the glass. The purpose of the taping is to observe the process of interviewing Consortium members before we conduct the seven groups in New York.
- Tapes and transcripts will only be available to study team members: no information from the groups will be linked to your name or organization.
- Because we are taping, please speak one at a time.
- I will direct the traffic, so to speak, to keep us on the topic, to ask for clarification, and to be sure we hear from everyone.
- The only rules are as folows: We are **not** trying to achieve consensus - we are interested in everyone's opinion- and in getting all points of view out on the table.
- Don't feel that you have to agree or disagree with eachother but do feel free to converse, ask eachother questions, add to eachother's ideas.

These are the **topics we'll cover:**

1. Whether or not the Healthy People Document needs a major overhaul or just minor adjustments.

2. What works and what doesn't work about the way the Goals 200 Document functions. What are the implications for change?

3. Consider the organizing principles - the priority areas - Should they be changed? How?

4. Should the criteria for setting objectives be changed? How should it be changed?

These are the **topics we'd like to avoid:**

What we **don't** want to talk about are **specific** priority areas, and most of all, **specific** objectives.

ELAPSED TIME 20 MINUTES

First, Considering the Document as a whole, do you believe it should be changed significantly? In one or two words, how should it be changed?

ELAPSED TIME 40 MINUTES

What are the functions of the document? In which ways has the document functiioned well?

SUMMARIZE AND ASK, what are the implications for change?

In which ways has the document failed to be effective?

SUMMARIZE AND ASK, What are the implications for change?

ELAPSED TIME 60 MINUTES

BREAK 10 MINUTES- MODERATOR MEETS WITH OBSERVERS
ELAPSED TIME 70 MINUTES

SHOW POSTER/HANDOUT OF PRIORITY AREAS

DISCUSS ALTERNATIVES (?) SHOW ALTERNATIVES(?)

This chart shows the way the priority areas were organized. Does this need to be changed? How?

What are the advantages and disadvantages of (ALTERNATIVE SUGGESTED)?

ELAPSED TIME 90 MINUTES

SHOW CHART/HANDOUT: CRITERIA FOR INCLUSION

These are the criteria for inclusion used to develop Goals 2000. Considering hte changes you've suggested earlier, how can the criteria be altered to achieve those changes.
What are the advantages and disadvantages of the changes suggested?

ELAPSED TIME 120 MINUTES

HEALTHY PEOPLE 2000 CONSORTIUM FOCUS GROUP MODERATOR'S GUIDE
NEW YORK GROUPS NOVEMBER, 1996

INTRO

My name is _____. I am part of a group at GW which is helping the Healthy People 2000 Program staff gather opinions from Steering Committee members and Consortium Members about the Healthy People 200 Framework. We are going to be conducting focus groups with approximately 60 Consortium members.

Please introduce yourselves and briefly tell us how you are involved with Healthy People.

ELAPSED TIME 15 MINUTES

- Thank you all for coming and helping us with our effort to get the opinions of Consortium members about the development of Healthy People 2010.
- We'll meet for 2 hours with a break in the middle. Please help yourselves to refreshments.
- This meeting is being video taped and observed from behind the glass.
- Tapes and transcripts will only be available to study team members: no information from the groups will be linked to your name or organization.
- Because we are taping, please speak one at a time.
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- The only rules are as follows: We are **not** trying to achieve consensus - we are interested in everyone's opinion- and in getting all points of view out on the table.
- Don't feel that you have to agree or disagree with eachother but do feel free to converse, ask eachother questions, add to eachother's ideas.

These are the **topics we'll cover:**

1. Whether or not the Healthy People Document needs a major overhaul or just minor adjustments.

2. What works and what doesn't work about the way the Goals 200 Document functions. What are the implications for change?

3. Consider the organizing principles - the priority areas - Should they be changed? How?
4. Should the criteria for setting objectives be changed? How should it be changed?

These are the **topics we'd like to avoid:**

What we **don't** want to talk about are **specific** priority areas, and most of all, **specific** objectives.

ELAPSED TIME 20 MINUTES

First, Please tell us how you (or others) have used the document in your organization?
Be Specific

ELAPSED TIME 40 MINUTES

How would you like to use it in the future?
SUMMARIZE AND ASK, what are the implications for change?

In which ways has the document failed to be effective?

SUMMARIZE AND ASK, What are the implications for change?

ELAPSED TIME 60 MINUTES

BREAK 10 MINUTES- MODERATOR MEETS WITH OBSERVERS
ELAPSED TIME 70 MINUTES

SHOW AND DISCUSS HANDOUT OF (1)PRIORITY AREAS
AND (2) GROWTH

What do you think of the number of priority areas and the number of objectives?

How do you thingk priorities should be set? How would you organize a list of priorities?

SHOW HANDOUT OF THREE ALTERNATIVES (3,4,5)

What are the advantages and disadvantages of these alternative suggestions? Is there another way you can suggest?

SHOW CRITERIA HANDOUT (6)

These are the criteria for inclusion used to develop Goals 2000. Considering the changes you've suggested earlier, how can the criteria be altered to achieve those changes?

Considering the Document as a whole, do you believe it should be changed significantly, only in small ways, or not changed at all?

HMO/PURCHASERS GROUP
DISCUSSION GUIDE: Conducted January 1997

1. Intro purpose of group and self – 5 minutes

2. Intros of participants, including name, affiliation , role in organization and answer to question What impact, if any, has HP2K had on the work of your organization? -- 10-15 minutes

3. Start by giving some history of HP2K and then talk about changes that have occurred in health care (managed care; accountability and quality initiatives; breakdown of boundaries between public and private sector activities and roles; changes in info technology). This group has been convened in part to think about the implications of those changes for the future of Healthy People Objectives – 10 minutes

4. Why do we have these objectives? What is their critical value and role? 15 minutes

   Who "owns" these objectives? Who Should? -- 10 minutes

5. What are the opportunities presented by changes in health care for the development and use of HP? What are the challenges? -- 20 minutes

   What can your organization contribute to the HP Objective process? -- 15 minutes

6. What kinds of specific changes are needed in building HP 2010 so it can have a more positive impact on your organization and on health care – 20 minutes

   Changes in who participates in the process of evelopment/selection of objectives

   Changes needed in the structure/organization of the document (Show goals; priority area categories; growth of # of objectives)

   * should it go on a diet?
   * should the framework for organizing objectives be changed?
   * should there be multiple versions for different purposes or audiences?

   Changes in how it is disseminated and promoted

   Changes in the data base for tracking progress

7. What should be the criteria for inclusion of objectives? What should not? (Show current criteria) ?? if there is time ??

APPENDIX D

HANDOUTS FOR FOCUS GROUPS

HIGHLIGHTS OF THE HEALTHY PEOPLE 2000 GOALS

GOAL 1:

INCREASE THE SPAN OF HEALTHY LIFE

GOAL 2:

REDUCE HEALTH DISPARITIES

GOAL 3:

ACHIEVE ACCESS TO PREVENTIVE SERVICES FOR ALL AMERICANS

CURRENT CATEGORIES OF HEALTHY PEOPLE 2000 PRIORITY AREAS

HEALTH PROMOTION

1. PHYSICAL ACTIVITY & FITNESS
2. NUTRITION
3. TOBACCO
4. ALCOHOL & OTHER DRUGS
5. FAMILY PLANNING
6. MENTAL HEALTH & MENTAL DISORDERS
7. VIOLENT & ABUSIVE DISORDERS
8. EDUCATION & COMMUNITY-BASED PROGRAMS

HEALTH PROTECTION

9. UNINTENTIONAL INJURIES
10. OCCUPATIONAL SAFETY & HEALTH
11. ENVIRONMENTAL HEALTH
12. FOOD & DRUG SAFETY
13. ORAL HEALTH

PREVENTIVE SERVICES

14. MATERNAL & INFANT HEALTH
15. HEART DISEASE & STROKE
16. CANCER
17. DIABETES & CHRONIC DISABLING CONDITIONS
18. HIV INFECTION
19. SEXUALLY TRANSMITTED DISEASES
20. IMMUNIZATION & INFECTIOUS DISEASES
21. CLINICAL PREVENTIVE SERVICES

SURVEILLANCE & DATA SYSTEMS

22. SURVEILLANCE & DATA SYSTEMS

GROWTH OF HEALTHY PEOPLE

1990 FRAMEWORK

- **226** OBJECTIVES
- **0** SPECIAL POPULATION TARGETS

2000 FRAMEWORK

- **300** OBJECTIVES
- **223** SPECIAL POPULATION TARGETS

2000 FRAMEWORK WITH 1995 MIDCOURSE REVISIONS

- **319** OBJECTIVES
- **376** OBJECTIVES INCLUDING DUPLICATES
- **334** SPECIAL POPULATION TARGETS
- **368** SPECIAL POPULATION TARGETS INCLUDING DUPLICATES

CURRENT CRITERIA FOR DEVELOPMENT OF HEALTHY PEOPLE 2000 OBJECTIVES

- **CREDIBILITY:** OBJECTIVES SHOULD BE REALISTIC AND SHOULD ADDRESS THE ISSUES OF GREATEST PRIORITY.

- **PUBLIC COMPREHENSION:** OBJECTIVES SHOULD BE UNDERSTANDABLE AND RELEVANT TO A BROAD AUDIENCE, INCLUDING THOSE WHO PLAN, MANAGE, DELIVER, USE, AND PAY FOR HEALTH SERVICES.

- **BALANCE:** OBJECTIVES SHOULD BE A MIXTURE OF OUTCOME AND PROCESS MEASURES, RECOMMENDING METHODS FOR ACHIEVING CHANGES AND SETTING STANDARDS FOR EVALUATING PROGRESS.

- **MEASURABILITY:** OBJECTIVES SHOULD BE QUANTIFIED.

- **CONTINUITY:** YEAR 2000 OBJECTIVES SHOULD BE LINKED TO THE 1990 OBJECTIVES WHERE POSSIBLE BUT REFLECT THE LESSONS LEARNED IN IMPLEMENTING THEM.

- **COMPATIBILITY:** OBJECTIVES SHOULD BE COMPATIBLE WHERE POSSIBLE WITH GOALS ALREADY ADOPTED BY FEDERAL AGENCIES AND HEALTH ORGANIZATIONS

- **FREEDOM FROM DATA CONSTRAINTS:** THE AVAILABILITY OR FORM OF DATA SHOULD NOT BE THE PRINCIPAL DETERMINANT OF THE NATURE OF THE OBJECTIVES. ALTERNATE AND PROXY DATA SHOULD BE USED WHERE NECESSARY.

- **RESPONSIBILITY:** THE OBJECTIVES SHOULD REFLECT THE CONCERNS AND ENGAGE THE PARTICIPATION OF PROFESSIONALS, ADVOCATES, AND CONSUMERS AS WELL AS STATE AND LOCAL HEALTH DEPARTMENTS.

ALTERNATIVE FRAMEWORK FOR HEALTHY PEOPLE 2010 PRIORITY AREA LIFE STAGES

- INFANTS
- ADOLESCENTS AND YOUNG ADULTS
- ADULTS
- OLDER ADULTS

PAN AMERICAN HEALTH ORGANIZATION REGIONAL GOALS

(A) TO INCREASE THE SPAN OF HEALTHY LIFE FOR ALL PEOPLE IN SUCH A WAY THAT HEALTH DISPARITIES BETWEEN SOCIAL GROUPS ARE REDUCED;

(B) TO ENSURE UNIVERSAL ACCESS TO AN AGREED-UPON SET OF BASIC HEALTH SERVICES OF ACCEPTABLE QUALITY, EMPHASIZING THE ESSENTIAL ELEMENTS OF PRIMARY HEALTH CARE;

(C) TO ENSURE SURVIVAL & HEALTHY DEVELOPMENT OF CHILDREN & ADOLESCENTS;

(D) TO IMPROVE THE HEALTH & WELL-BEING OF TARGET PRIORITY POPULATION GROUPS;

(E) TO ENSURE HEALTHY POPULATION DEVELOPMENT;

(F) TO ERADICATE, ELIMINATE, OR CONTROL MAJOR DISEASES CONSTITUTING REGIONAL HEALTH PROBLEMS;

(G) TO ENABLE UNIVERSAL ACCESS TO SAFE & HEALTHY ENVIRONMENTS & LIVING CONDITIONS;

(H) TO ENABLE ALL PEOPLE TO ADOPT & MAINTAIN HEALTHY LIFESTYLES & BEHAVIOR.

ALTERNATIVE CATEGORIZATION OF HEALTHY PEOPLE 2000 PRIORITY AREAS

HEALTH PROMOTION

1.PHYSICAL ACTIVITY & FITNESS & 2.NUTRITION
3.TOBACCO & 4.ALCOHOL & OTHER DRUGS
6.MENTAL HEALTH & MENTAL DISORDERS
7.VIOLENT & ABUSIVE DISORDERS

HEALTH PROTECTION

9.UNINTENTIONAL INJURIES
10.OCCUPATIONAL SAFETY & HEALTH
11.ENVIRONMENTAL HEALTH
12.FOOD & DRUG SAFETY
13.ORAL HEALTH

PREVENTIVE SERVICES

5.FAMILY PLANNING
14.MATERNAL & INFANT HEALTH
15.HEART DISEASE & STROKE
16.CANCER
17.DIABETES & CHRONIC DISABLING CONDITIONS
18.HIV INFECTION & 19.SEXUALLY TRANSMITTED DISEASES
20.IMMUNIZATION & INFECTIOUS DISEASES
21.CLINICAL PREVENTIVE SERVICES

PUBLIC HEALTH INFRASTRUCTURE

8. EDUCATION & COMMUNITY-BASED PROGRAMS & 22.SURVEILLANCE & DATA SYSTEMS