Workshop Objectives

1. Examine and evaluate opportunities for using data-driven health planning tools

2. Translate and apply baseline health forecasts to write grants, engage stakeholders and foster collaboration

3. Listen to a program’s experience taking action using health forecasts

4. Characterize the benefits of forecasting interventions and demonstrate applications for their field
Part I
Foreseeing the Opportunities

UCLA Center for Health Advancement

Our Mission:

provide stakeholders, from community program leaders to local and state government policy makers with tools to:

- support informed decision-making;
- build consensus; and
- leverage collaborative opportunities with a range of partners.
Functions of the UCLA Center for Health Advancement

- Identify likely public health consequences of decisions across sectors;
- Identify options for minimizing harm and maximizing benefits for the public’s health;
- Provide information that gives decision-makers a higher degree of confidence in choosing between alternative courses of action.

Why should decision-support tools be integrated into the decision-making process?

[Diagram showing the relationship between evidence, value of analysis, uncertainty, and the number of decisions.]
What should be done in the face of uncertainty?

- Nothing? Costs of inaction, programs, events and lives do not wait for certainty
- Make a decision on “gut feeling”? Bias, may ignore or misinterpret information available to others

OR

- Carefully and judiciously use available evidence?

What is a decision-support tool?

- wide range of computer-based tools designed to support decision analysis, narrow the field of choice, and aid visualization of the data or problem.

- facilitates dialogue and exchange of information providing insights to experts and non-experts as they explore policy or program options.
Center for Health Advancement decision-support tools

- How will the baseline health status of my service area change over the next 10, 20, or 30 years?
- Which intervention will improve health in my community?
- Which program or policy would have the greatest impact on health, education and crime in my jurisdiction and what are the geographic differences in impact (by zip code, school district, etc.)?
- What is the cost savings for local and state government if this program or policy is implemented in my jurisdiction?
- What are the potential health impacts of a proposed project or policy?
- Are these impacts likely to worsen existing health disparities among affecting populations?
- What can be done to minimize potential harm and maximize potential benefits?

Opportunities to transform health together

Center for Health Advancement projects provide:

- Tailored analyses
- Connect diverse sectors to accomplish mutual goals
- Cost-benefit analysis and return on investment
- Quantitative and qualitative assessment of policies and programs
- Simulated short and long-term harms and benefits to targeted populations
- Intervention impact analysis
Part II
Making the Case Using Data Analytics
(example; type II diabetes)

Diabetes defined

What is diabetes?

- Diabetes is an *incurable* and *progressive* disease.
- Shortage of insulin that allows glucose to enter cells and convert to energy
- When diabetes is not controlled, glucose and fats remain in the blood → damage vital organs

What is diagnosed type II diabetes?

A fasting plasma glucose level >126 mg/dl (7.0 mmol/l)

1 out of 4 don’t know

Source: CDC "Diabetes Snapshot" (2014)
Diabetes: a public health epidemic

### National burden

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>1 in 11</td>
</tr>
<tr>
<td>2050</td>
<td>1 in 3</td>
</tr>
</tbody>
</table>

State of California burden (2014)

- **2,539,000** diagnosed diabetics
- **1 out of 6** age 65 and older have type II diabetes

What is the effect of diabetes?

**Individual**

- Symptoms (changes in blood sugar)
- Reduced quality of life

**Family**

- Emotional burden
- Lost productivity

**Healthcare Organizations**

- **$1 in $5** Healthcare dollars spent on treating diabetics

**Communities**

- Disparities in health by race, income, education
- Economic burden (loss of productivity, absenteeism)
Type II diabetes in Los Angeles County

California Health Interview Survey diabetes prevalence among adults in Los Angeles County

757,000 diabetics

Total Population Size (18+)
7,436,000

Source: CDC "Diabetes Snapshot" (2014)

Health Forecast: Los Angeles County Type II Diabetes

CHIS Estimate

Average: 9.75%

↑ 60%
increase between 2010 and 2040

Source: California Health Interview Survey
Health Forecast: Los Angeles County Type II Diabetes by race/ethncity

FORCAST 2040: Between 2010 and 2040, how will the number of type II diabetes cases shift by race/ethnicity?

Los Angeles County

<table>
<thead>
<tr>
<th>Race Group</th>
<th>2010</th>
<th>2040</th>
</tr>
</thead>
<tbody>
<tr>
<td>African-American</td>
<td>13.5%</td>
<td>18.0%</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>8.5%</td>
<td>12.7%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>12.1%</td>
<td>19.4%</td>
</tr>
<tr>
<td>White (Non-Hispanic)</td>
<td>6.2%</td>
<td>8.2%</td>
</tr>
</tbody>
</table>
Geographic perspective: type II diabetes prevalence adults

Health Forecast: SPA 5 type II diabetes by education
Health Forecast: SPA 6 type II diabetes by education

Diabetic Doomsday?

Forecasts don’t portray an optimistic future

HOWEVER, this is only glimpse of the future based on current trends.

Anticipate, Prepare, and Plan for Healthier Communities

Established over ten years ago by Dr. Fielding and researchers at UCLA:

- envisioned a model to provide decision-makers with a long-term perspective using evidence-based research to apply in actual public health practice
- Leverage available technology and data to forecast health and anticipate the future effects of current decisions and actions

“The model takes raw data and transforms it into action information to prevent costly chronic conditions”

-Dr. Jonathan Fielding
Health Forecasting Results:
Anticipate, Prepare, and Plan for Healthier Communities

- **Strengthen grant proposals** by quantifying future health in the absence of interventions
- **Understand current health status** of a unique geographically based community
- **Anticipate problems and minimize risk**
- **Inform resource allocation**
- **Identify high risk populations** and opportunities for high-impact investments

Health Forecasting background and functions

**Forecasts enable users to examine health outcomes and modifiable health behaviors over a 20 or 30 year time horizon.**
- Granular results of current and future health status available by race/ethnicity, age, and education
- Compare the impact of interventions

**Time-Horizon:**
- 2010-2040

**Geography:**
- Customized by zip code

**Focus:**
- Preventable health conditions
- Behavioral risk factors
Leverage what we know

HF simulation model is based on an individual life-course trajectory

Meet Sam.

✓ African-American
✓ Smokes a pack a day
✓ Overweight $\rightarrow$ Obese

leverages health data and research findings from medical literature with demographic population projections to tell a story about one person, a community, and a hospital catchment area.

Advantages to the simulation model

cross-sectoral collaboration to transform health
Population shifts and changes in health risk profiles

Year 2010

21.6 per 100
Seniors Working age

Year 2030

36 per 100
Seniors Working age

2/3 increase in 20 years

Implications:
- Economic (Social Security, Medicare, other age dependent entitlement programs)
- Healthcare demands

Population shifts and changes in health risk profiles

Race & Ethnic Share of Total Population

Implications:
- Ethnic minorities tend to have worse health outcomes: “Hispanic Paradox”
- Access to quality care issues

Opportunity to develop community health improvement tool

Computing Technology

- Power to run complex algorithms with millions of observations

Vast Amounts of Data

- Accessibility
- Availability

Quantitative Results

- Tell a story

Core functions:

- Understand current status and possible roadmaps
- Anticipate problems
- Avoid risk
- Identify weaknesses & opportunities

“Information analytics is emerging as one of the most powerful tools to help companies make better decisions, plans and forecasts.”

—Wall Street Journal Contributor: Irving Wladawesky-Berger

The Microsimulation Health Forecasting Process

- Compile population data from relevant surveys
- Conduct literature search
- Create population profile based on reported and estimated joint distribution of demographic factors, health risks and health conditions

- Use data from Step #1 to create a synthetic population of individuals
- Calibrate baseline so that aggregated synthetic data frequencies reflect reported population profile from Step #1 level
- Run model with annual transitions in health status based on programmed risk functions
- Introduce intervention scenarios to alter transition probabilities

- Summarize modeled results into tables organized by demographic and geographic characteristics
- Allow users to query tables
- Create pre-formatted reports with tables and graphs

- Reports include tables and graphs by health condition, behaviors and BMI status for:
  - race/ethnicity and age group
  - educational attainment and age group
- Resource allocation ratios by race/ethnicity and age group

Source: NACHC, “Community Needs Assessment and Data-Supported Decision Making” (2012)
Developing a county model

<table>
<thead>
<tr>
<th>Occurs within the simulation program</th>
<th>Occurs outside the simulation program</th>
<th>Occurs within the simulation program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set Population Baseline</td>
<td>Integrate risk factors &amp; projections</td>
<td>Validate</td>
</tr>
<tr>
<td>Use CA Department of Finance projections for each county</td>
<td>Set parameters to adjust behavior &amp; disease modules</td>
<td>Upload the County study</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Define unique catchment areas</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Compare forecast baseline to other sources</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Baseline numbers are adjusted</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Model is run again &amp; validated</td>
</tr>
</tbody>
</table>

Value as a community health improvement tool

- Place-based focus → Tailored to your population (zip code)
- User-friendly
- Supported by existing data accounting for past health trends & demographic shifts

Supports Data-Driven Decision-Making:

- Identify high-risk groups
- Demonstrate need
- Engage
- Prioritize
- Evaluate

Which groups are disproportionately affected?
Which will the future look like if we don’t intervene to reduce chronic disease?
How can I communicate the magnitude of the problem with my board of directors, community members, elected officials?
Which chronic conditions impact my community? Which evidence-based programs could have the most effect?
How can I benchmark my efforts? Am I moving the dial?
**Strengthen grant-writing**

**Example: Local advocacy group promotes walking trails**

**FORECASTS PROJECT:** marginal growth in physical inactivity but race/ethnic disparity to grow larger, especially among African-American residents

**WHAT WE KNOW:** Physical inactivity predicts overweight and obesity -> tied to other health problems

**GAMEPLAN:** apply for a grant to increase opportunities for physical activity in your community

**WHAT YOU NEED?** Demonstrate need to funder that funding your program is best use of funds

- **Identify high-risk groups**
- **Demonstrate need**
- **Engage**
- **Prioritize**
- **Evaluate**

Use forecasts to identify low physical activity (PA) by race/ethnicity and education in 2010 & 2040

Cross reference physical inactivity rates with overweight and/or obesity by race

Incorporate graphs and charts to visually engage funder

Resource allocation would be targeted to those who need it most

Use forecasts to design evaluation, testing pre- and post

Compare to what was expected

**Facilitate collaboration**

**Example: Nonprofit hospital and school district:**

**FORECASTS PROJECT:** increasing rate of Hispanic obesity within their service area which is largely Latino

**WHAT WE KNOW:** Overweight and obesity are linked to chronic disease. Overweight/obese children higher probability of becoming overweight/obese adults.

**GAMEPLAN:** prevent overweight/obesity among children with a physical activity program

**WHAT YOU NEED?** Collaborator, such as a school district

- **Identify high-risk groups**
- **Demonstrate need**
- **Engage**
- **Prioritize**
- **Evaluate**

Objectively identify population growth and projected rates of overweight and obesity by race/ethnicity

Use forecasts as a guide explaining why program is needed.

Tailor and agree to a tangible goal like Healthy People 2020

Encourage working together to avoid duplicative efforts/pool resources

Work together to identify schools that will benefit the most from a collaboration

Obesity reduction is a slow process.

Use baseline and intervention forecasts to show progress years in future
Inform community health needs assessments (CHNA)

Example: Nonprofit hospital require CHNA to inform Implementation Plan

FORECASTS PROJECT: significant change in service area demographics, health outcomes projected to change substantially

WHAT WE KNOW: limited CB budget; survey costs are high; stakeholder/public input required

GAMEPLAN: identify health needs, engage stakeholders, develop programs to best suit needs

WHAT YOU NEED? Complete CHNA to inform your Implementation strategy to meet IRS guidelines for reporting

- Identify high-risk groups
- Quantify health trends and related health behaviors
- Pinpoint unexpected forecasts/high-low
- Demonstrate need: Use socio-demographic determinants to tell a story about changing population
- Engage: Use forecasts to make the financial case to board
- Prioritize: Use Snapshots to outreach
- Evaluate: What is your roadmap?
- Design an evaluation plan based on anticipating future health needs

Demonstration: How to strengthen collaboration?

Nonprofit hospitals are required to perform community benefit activities. They often work with community groups, schools and faith-based groups.

How to?
- Incorporate forecasts into a talking piece → open dialogue explaining why ‘addressing diabetes’ is an important issue in the community and why you need their support/help
- Include forecasts in a handout to discuss rationale
- Or presentation → introduce reasoning behind a program to solicit buy-in and encourage feedback/participation implementing Tailor programs that are culturally sensitive

Community groups are all about relationships and connecting with the community to achieve a goal(s).

How to?
- Community groups enable people to share information and help each other to solve issues; Introduce a ‘Health Snapshot’ into the discussion to support your argument for solving a problem
- Use charts/graphs to stimulate debate and discussion to provoke community-led action;
- Can help a community to access funds to improve the local area.
- Use health forecasts as a means of work with other community groups to build a coalition
How to take action?

Different constraints: audience, resources, and operation mechanisms

Same goal use data to tell a story about health in your community.

Use your tailored service area reports to:

- Review health status and how this burden will change over time
- Stratify a population by risk level to identify at-risk groups
- Compare your service area health status to the County or SPA
- Prioritize resource allocation
- Design culturally sensitive programs
- Engage stakeholders

Part III

Taking Action by Promoting Action:
How the ‘Be Well’ Program uses health forecasts?
“BE WELL” Weight Management and Light Exercise

• PROJECT OVERVIEW
  In 2003, Food and Nutrition Management Services, Inc. (FNMS), a private nutrition counseling agency, developed “BE WELL” – a weight management and exercise program that provides nutrition counseling, low impact exercise and weight management to high risk seniors with chronic conditions i.e. DM, heart disease, hyperlipidemia, HTN, and obesity.

PBS “BE WELL” Story

• Video
“BE WELL” Description

- Participants aged 60+ with chronic diseases (with MD approval/awareness of participation)
- Total of 32 training modules.
- 32 hours Nutrition Education with RDN
- Planning for Success with Psychologist
- Drug/Drug interaction (Clinical Pharmacist)
- 32 hours Exercise with credentialed trainers
- RDN one-on-one consultation for goals
- Healthy cooking/recipes presented/tasting
- “Buddy System” to engage in peer coaching.
- 197 points of data collected.
In 2013-2014, the City of Inglewood received a grant to conduct a more rigorous evaluation of the program comparing health outcomes for the seniors who enrolled in the program with the health outcomes of a group of seniors who did not participate in the program.

Los Angeles County Area Agency on Aging … was the first supporter of “BE WELL”.

Supported nine “BE WELL” intensives (Inglewood, Hawthorne, Cerritos, El Monte, South El Monte, East Los Angeles, La Puente, Gardena, Pomona)

City of Inglewood spearheaded the BE WELL Advisory Committee of Community Partners in 2003 to secure 9 more intensives including a two year research study with control group.

The program was named by AAA nutritionist and former Academy of Nutrition and Dietetics National Officer, friend and colleague Susan Kennedy MBA RD.
Research Participants

• The evaluation of the research compares health outcomes for two groups – the intensive group, \((n=99\text{ total-2 yr. period})\) which includes seniors who have completed the “BE WELL” program, and a comparison group \((n=103\text{-same period})\), which includes seniors who have never participated in the “BE WELL” program.
Demographics

• The intensive group:
  • Higher income: 38% with an income of under $20,000 compared to 78% of the comparison group in the same income bracket
  • More education: 50% with some college education compared to 54% of the comparison group with only high school or less education
  • More live in their own home (62% versus 38% of the comparison group). All of the differences are statistically significant.

Results!

Improved:
  • HgA1c lab (up to 100% of clients with Diabetes)
  • Cholesterol and other lipid levels significantly
  • Senior Fitness Test scores in every program
Results!

Reduced:
- BMI (31.8 kg/m² to 30.5 kg/m²)
- Nutrition Risk Scores (Initial 5.7 to final 4.3)
- Medication reduction (Initial 7.7 to final 6.3)
- Depression Scale (PHQ-9 $\chi = 2.35; p = .017$) (Beck Inventory $\chi = 3.13; p = .002$)

AWARDS
(national and local)
Peer Reviewed Publications

• Kogan AC, Be Well: An Exercise and Nutrition Pilot Intervention Impacting Blood Measures. JJ Physiother Exercise, 2016, 2 (1):014

• Kogan AC, Be Well: Results of an Exercise and Weight Management Intervention among At Risk Older Adults. J Applied Ger , April, 2012

• ‘Be Well” ..It Works! Exercise and Weight Management for the High Nutrition Risk Senior Poster Session Academy of Nutrition & Dietetics, 9/08.

• www.fnmsnet.org

What is our long-term goal at Be Well?

• Expand the program to more people, more places

• Be self-sustainable

• More research
Strategy to Achieve Goals

- Partner with universities- USC & UCLA

- Work with foundations for sustainability

- Make a business case
  - Determine marketing and costing strategy for acceptability by third-party health plan providers and government programs ie, CMS

Challenges

- Funding Challenges
  - Can’t rely on grants

- Not enough information about the business case
  - Need to quantify costs/ return on investment for sales piece

- Communication Challenge
  - Need to develop marketing materials and sales staff
  - Must quantify need. But how?
How we came to work with the Center for Health Advancement?

- Attended workshop

- Set-up a meeting to talk about our project and where we would like to go

- Talked about the possibility of modeling the Be Well program through ‘fee for service’ contract
  - Unfortunately costs were prohibitive for the program at the moment

How we’re taking action using health planning tools?

- Develop strong evidence-base
  - We know the effect. It works. But people want to see by ‘how much’

- Demonstrate trends if we don’t take action
  - How big of a problem? How much will it cost to fix?
  - Why not PREVENT?

- Share forecasts as a communication piece in business case
  - Visuals help people understand scope of problem we’re facing
Health Forecasting & BE WELL

- Health Forecasting for the BW area notes the uptick trend in chronic illnesses 2010-2040 and the significant need for intervention.
- The study will be used to quantify increasing cost of care with increased volume.
- Increasing cost of care can be utilized to quantify the opportunity for reduced healthcare cost and improved quality of life outcomes from BE WELL programs that mitigate /impact chronic illness.

Break-out Session
Within your organization, how could you use Health Forecasts in the following settings:

<table>
<thead>
<tr>
<th>1) Communicating results?</th>
<th>2) Targeting Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>3) Outcome evaluation &amp; tracking</td>
<td>4) Priority Setting</td>
</tr>
</tbody>
</table>

Part IV
 Intervention Impact: The Diabetes Prevention Program in Los Angeles County
Intervention impact models in public health

**CDC Prevention Impacts Simulation Model (PRISM)**
- Simulates chronic disease dynamics from 1990-2040
- Focuses on 34 different interventions

**Cancer Intervention & Surveillance Modeling Network (CISNET)**
- National Cancer Institute
- **improve our understanding** of cancer control interventions in prevention, screening, and treatment and their effects on population trends in incidence and mortality

**NIH Models of Infectious Disease**
- Use computational, statistical, and mathematical models to **understand** infectious disease dynamics and thereby assist the nation to **prepare** for, detect, and **respond** to infectious disease threats

Why forecast health?

**Health status in the U.S.**
- **50% of all adults** have one or more chronic health conditions (2012)
- **Seven of the top 10 causes of death** in 2010 were chronic diseases

**Healthcare costs increasing**
- **84% of all health care spending in 2006 was for the 50% of the population** who have one or more chronic medical conditions

**Technologic innovations**
- Computing power and data sharing enable hospitals and other goal-oriented organizations to leverage data
Health Forecasting Partners expand simulation model

Kaiser Permanente
Efficiently combining multiple sources of survey data to improve local area estimates of health and forecasting outcomes for Los Angeles County

National Institutes of Health
Forecasting and improving Latino health by examining the role of acculturation and physical activity to account for health disparities among the Latino population.

Robert Wood Johnson Foundation
Incorporating additional risk factors (i.e., smoking) and disease outcomes (i.e., lung cancer) into the forecasting model and applying the model to other states, beginning with Arkansas and Wisconsin.

UniHealth Foundation
Supporting hospitals in assessing current and future characteristics of populations they serve and identifying long-term planning needs of local communities. Providing information on future health and health disparities among subpopulations in the absence of additional effective health promotion and disease prevention efforts

Parameters and intervention criteria

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Epidemiological trends</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability of data</td>
<td></td>
</tr>
<tr>
<td>✓ Unit of Analysis</td>
<td>✓ Patterns &amp; trends</td>
</tr>
<tr>
<td>✓ Longitudinal</td>
<td>✓ Strength of studies</td>
</tr>
<tr>
<td>✓ Robust</td>
<td>✓ Generalizable</td>
</tr>
</tbody>
</table>

Evidence-based Interventions

✓ Effective recommendations
✓ Linked to one of the outcomes in the model
✓ Robust statistical data on dose-response
✓ Stochastic effects that can be assigned probability distribution
✓ Scalability and replicability
Why model the Diabetes Prevention Program?

Diabetes is a costly condition & affects a large segment of population

≈20% nations healthcare dollars treat diabetics

2,539,000 Californians diagnosed diabetics

Major multicenter clinical research

✓ participants from 27 clinical centers around the United States were randomly divided into different treatment groups.
✓ Large sample size
✓ Diverse population
✓ Replicable
✓ Demonstrated results

Intervention Impact: The Diabetes Prevention Program

What is the Diabetes Prevention Program?

The Diabetes Prevention Program is an intervention meant to reduce the incidence of Type 2 diabetes among high risk adults through individual lifestyle modification, including at least 7% weight loss and at least 150 minutes of physical activity per week. It is modeled after the randomized control study conducted by Knowler.

What is the long-term individualized counseling Diabetes Prevention Program?

Long-Term Individual Counseling Scenario:
Case managers meet with each participant for at least 16 sessions in the first 24 weeks and then at least every other month individually or in groups. Participants were asked to lower fat to less than 25 percent of caloric intake. If reducing fat did not result in weight loss, a calorie goal was added. Participants received culturally sensitive instruction in diet, exercise, self-monitoring, goal-setting, and problem-solving. The intervention effects begin in 2016.

High risk candidates for the Diabetes Prevention Program are individuals with:
- higher than normal (95-125 mg/dl) but not yet in the diabetic range
- BMI greater than 25+ (22+ for Asian Americans)
How we modeled the Diabetes Prevention Program

Modeled using
Knowler et. Al (2009) to reduce incidence of Type 2 diabetes among high risk adults through individual lifestyle modification, including at
• least 7% weight loss and
• at least 150 minutes of physical activity per week.

Participants are
-Overweight/obese with blood glucose levels higher than normal (95-125mg/dl) but not yet in the diabetic range
-age 25 years+

Effect size used:
Incidence reduction at 3 years for participants is 58% (95% CI, 48-66%)

Implementation date: 2015

Intervention impact: type II diabetes prevalence
Projected number of diabetics in LA County

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2020</th>
<th>2030</th>
<th>2040</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline Diabetics</td>
<td>849,613</td>
<td>975,219</td>
<td>1,232,944</td>
<td>1,469,817</td>
</tr>
<tr>
<td>Diabetes Prevention Program Diabetics</td>
<td>849,613</td>
<td>950,675</td>
<td>1,073,196</td>
<td>1,197,487</td>
</tr>
<tr>
<td>Difference</td>
<td>0</td>
<td>-24,544</td>
<td>-159,748</td>
<td>-272,330</td>
</tr>
</tbody>
</table>

6% Fewer Diabetics

What are the implications?

**Individual/ Family Burden:**
- Increase in disabled people
- Loss of productivity
- Higher depression rates

**Community:**
- More resources needed

**Hospitals:**
- Heavy burden extra 272,000 diabetics if trends continue
- Higher costs
More in-depth: Type II diabetes by race/ethnicity

Forecast Focus:
- Hispanics projected to have the highest baseline rate (19.5%) AND highest cases of diabetes
- Prevalence increases higher for Asian/Pacific Islanders than Non-Hispanic White; Diabetic count is also higher
How can we use forecast insights to inform decision-making?

Mitigate harm:
- In every scenario, type II diabetes prevalence projected to increase
- Implement intervention to reduce deleterious effect on individual, community and healthcare setting

Tailor program:
- We know that Hispanic and Asian/Pacific Islanders will see a higher share of diabetes at baseline and will have the most absolute reduction in cases following DPP
- Design a program that is culturally sensitive

Allocate/request funds for DPP program:
- Evidence is clear. DPP works.
- Co-morbid conditions also impacted

Big picture comparison: diabetes prevalence by age group
Big picture comparison: diabetes share by age group

Insights?
- Diabetes among young adults will shrink. Why?
- Middle Age?
- Retiree prevalence will increase dramatically. Why?
Comparison: diabetes prevalence by education

<table>
<thead>
<tr>
<th>Scenarios</th>
<th>No High School</th>
<th>High School</th>
<th>Some Education Beyond HS</th>
<th>Bachelor's</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td></td>
<td></td>
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<tr>
<td>DPP Long-Term Scenario</td>
<td></td>
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</table>

Evidence-based decision-making

process for making decisions about a program, practice, or policy that is grounded in the best available research evidence and informed by experiential evidence from the field and relevant contextual evidence.

- Resources available to translate into practice
- Use tools such as Health Forecasting to identify most viable approach
- Vetted interventions
- Combine various disciplines including, epidemiology, biostatistics, behavioral sciences, health economics, and health care management.
Framework informed by Health Forecasts

**Stage one:** develop an initial, concise, operational statement of the issue

**Stage two:** determine what is known through the scientific literature

**Stage three:** quantify the issue

**Stage four:** develop program or policy options

**Stage five:** develop an action plan for the program or policy

**Stage six:** evaluate the program or policy

Source: Missouri Department of Health Framework (1992)

Forecasting Health enables hospitals, cities, and community groups to:

- **Make data driven decisions.**
  - ✓ Research base links clinical and practice

- **Quantify collaborative community improvement activities**
  - ✓ ‘Best guess’ in quantifying interventions not systematic, misperceptions, unscientific
  - ✓ Quantified numbers and evidence-based decisions can be integrated into the operating strategy of the health care system

- **Make an argument about the best course of action and bottom-line using evidence-based research. What’s the ROI?**
  - ✓ Population health management focus on prevention and cost-savings

- **Focus on community-level health**
  - ✓ Place-based initiatives
Translating data and analysis to optimize community health.