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# Cost Estimates of Foundational Public Health Services: Results from Piloting an Expert Consensus Methodology

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# Cost estimation methods

- **Prospective “expected cost” methods**
  - Vignettes
  - Surveys with staff and/or administrators
  - Delphi group processes
- **Concurrent “actual cost” methods (micro-costing)**
  - Time studies with staff
  - Activity logs with staff
  - Direct observation
- **Retrospective “cost accounting” methods**
  - Modeling and decomposition using administrative records
  - Surveys with staff and/or administrators

# Key issues: What's the cost of capability?

- Delineating state vs. local roles and division of effort
- Identifying scale and scope effects
  - By population served
  - By range of programs supported (portfolio effect)
- Identifying input factors that affect costs
  - Resource prices
  - Case mix
- Identifying key output differences across settings
  - Intensity
  - Quality
  - Reach

**Estimating the Costs of Foundational Public Health Capabilities: A Recommended Methodology**

Available at [http://works.bepress.com/glen\\_mays/128/](http://works.bepress.com/glen_mays/128/)

# Background and Overview: Piloting the Methodology in Kentucky

- Discussions with Kentucky Health Department Association (KHDA) to introduce & explain ***Foundational Public Health Services (FPHS)*** framework using RESOLVE FPHS articulation/definitions document
- Buy-in: KHDA formed a finance workgroup to evaluate how to incorporate FPHS framework into current financial & performance reporting system.
  - Crosswalk of chart of accounts with FPHS framework
- Participation in Cost-Estimation Pilot Project (6 members of workgroup serving as a representative sample – from small rural to large urban to multi-county health districts)
- Development of a cost data collection instrument

# Costing Methodology (1/2)

- Adapt Washington DACS instrument as a starting template and modify & enhance accordingly
- Goal is for cost data collection instrument to be efficiently self-administered and capture estimates that account for uncertainty (i.e. dynamic nature of public health - FPHS demand and supply)
- Empirical approach: Estimate FPHS Costs by modeling uncertainty associated with cost data collected
  - Given sample size, quantify uncertainty through model simulation
- Generate probability distribution – the range of all possible values and the likelihood of their occurrence
  - Independent variables / Inputs → Input Distribution
  - Dependent variable / Output → Distribution of output values calculated from all possible combinations ('scenarios') of input values
  - Best of all, these probability distributions can be graphed!

# Crosswalk of FPHS with Kentucky's Chart of Accounts

Additional Services	<p>Programs/Activities Specific to Local Community Need</p> <p>Cost Centers - <b>715, 718, 730, 748, 769, 810, 813, 858, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 882, 891</b></p>				
Foundational Public Health Programs "Responsibilities"	<p>Communicable Disease Control</p> <p><b>801, 806, 807, 842, 843, 845</b></p>	<p>Chronic Disease &amp; Injury Prevention</p> <p><b>722, 723, 738, 765, 805, 809, 818, 832, 836, 841, 856, 857</b></p>	<p>Environmental Public Health</p> <p><b>500, 520, 540, 560, 580, 591</b></p>	<p>Maternal, Child &amp; Family Health</p> <p><b>760, 766, 767, 768, 803, 804, 808, 816, 833, 848, 852, 853, 854</b></p>	<p>Access to &amp; Linkage with Clinical Care</p> <p><b>712, 741, 770, 800, 802, 811, 883</b></p>
Foundational Public Health Capabilities	<p><i>Across all Programs (i.e. cross-cutting)</i></p> <p>Assessment (Surveillance and Epidemiology) - <b>844, 890</b></p> <p>Emergency Preparedness &amp; Response (All Hazards)-<b>746,747,749,757,759,763,771,815,821,822,823,824,825</b></p> <p>Communications</p> <p>Policy Development &amp; Support - <b>836, 890</b></p> <p>Community Partnership Development - <b>735, 736, 740, 756, 761, 837, 893</b></p> <p>Organizational/Business Competencies (Governance, Equity, IT, HR, etc.) - <b>724, 750, 888, 894, 897, 898</b></p>				

# Survey Instrument (4/4): Current Attainment Scale

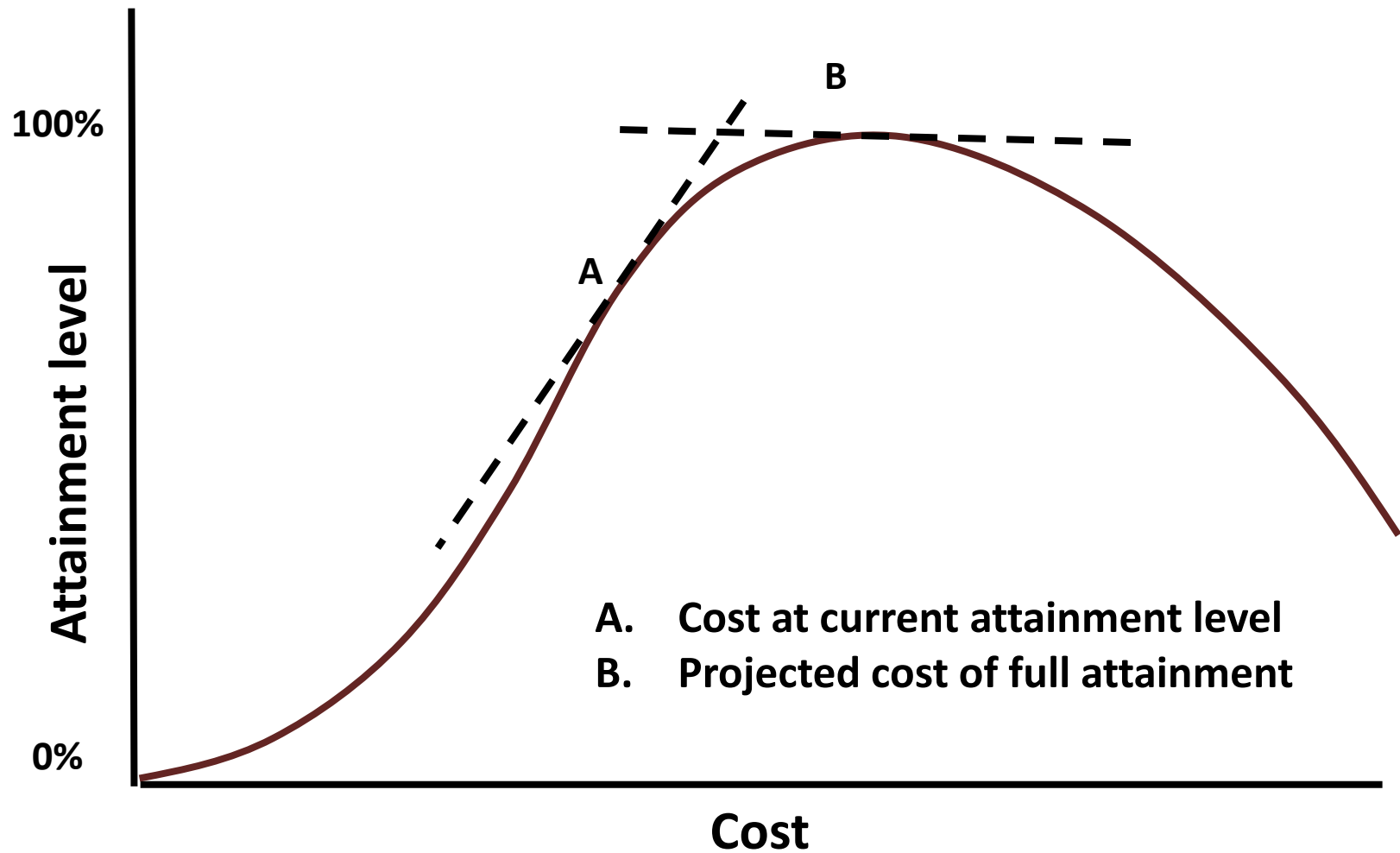
## Used to derive FPHS Projected Costs

“Based on your understanding of how each public health foundational capability and foundational area is defined, please provide your **global or overall assessment** on the following question: *For each foundational category, what is the estimated percentage currently being met by your health department?* “

FOUNDATIONAL CAPABILITIES	Point Estimate	Range (Min, Most Likely, Max)
Assessment (surveillance and epidemiology)		
Emergency Preparedness (All Hazards)		
Communication		
Policy Development and Support		
Community Partnership Development		
Organizational Competencies		

FOUNDATIONAL AREAS	Point Estimate	Range
Communicable Disease Control		
Chronic Disease and Injury Prevention		
Environmental Public Health		
Maternal/Child/ Family Health		
Access/Linkage with Clinical Health Care		

# Estimation of “projected” costs from current attainment ratings



# Costing Methodology Outputs

- Methodology produces a **cost distribution** for each Foundational Capability (FC) and Foundational Area (FA) specified in the National FPHS Definition document
- Separate estimates of “current” and “projected” costs  
**Current:** cost of resources currently used to produce FCs and FAs  
**Projected:** cost of resources estimated to be required to fully meet FC and FA definitions, based on current levels of attainment

# Costing Methodology Outputs

## ■ Foundational Capabilities (FCs) Costs

- Health Assessment
- Emergency Preparedness
- Communications
- Policy Development and Support
- Community Partnership Development
- Organizational Competencies

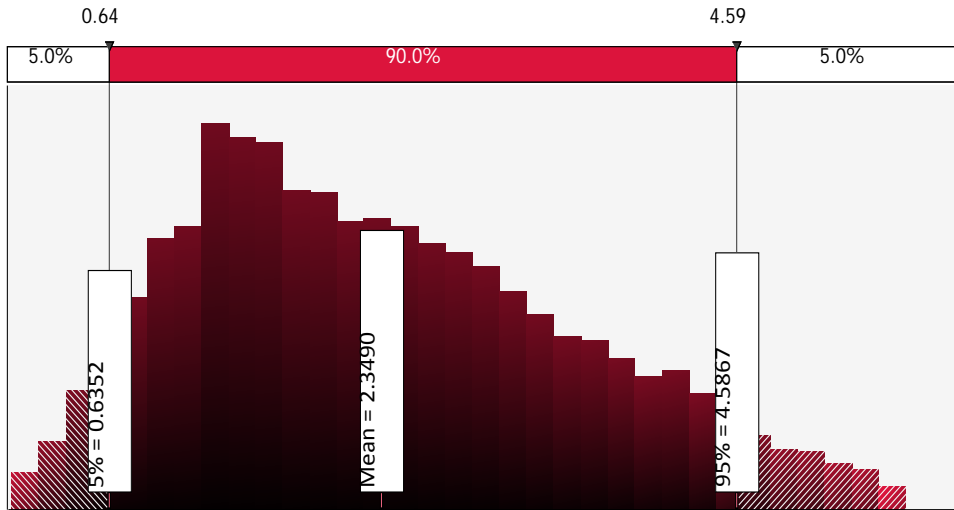
## ■ Foundational Areas (FA) Costs

- Communicable Disease Control
- Chronic Disease & Injury Prevention
- Environmental Health
- Maternal and Child Health
- Access and Linkage to Clinical Care

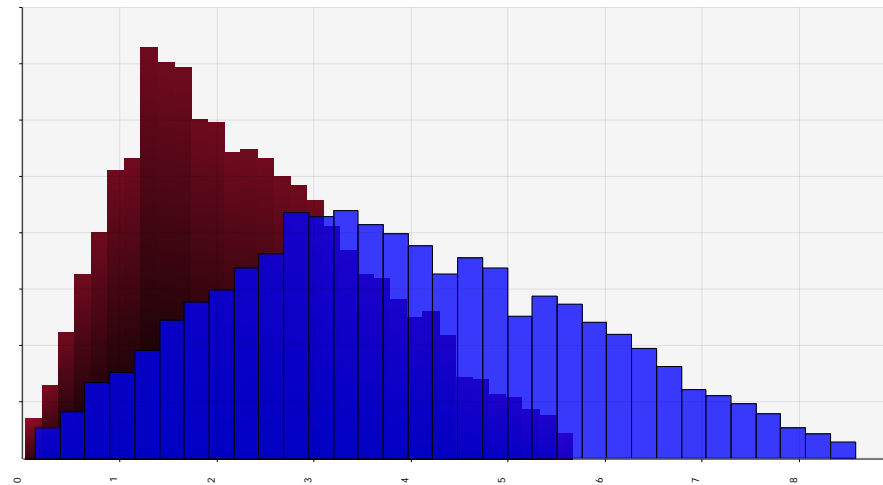
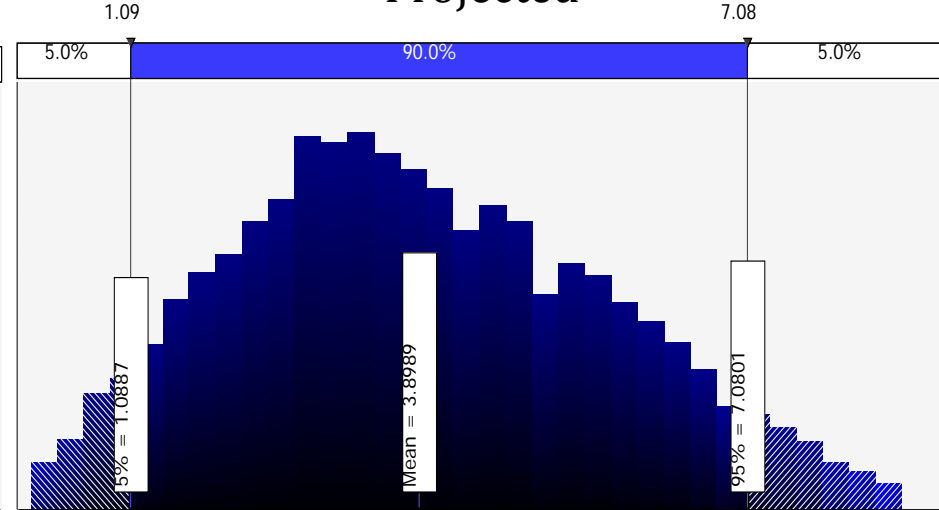
■ Total costs =  $\sum FC + \sum FA$

# Foundational Capability (FC) – Assessment (per capita \$)

## Current

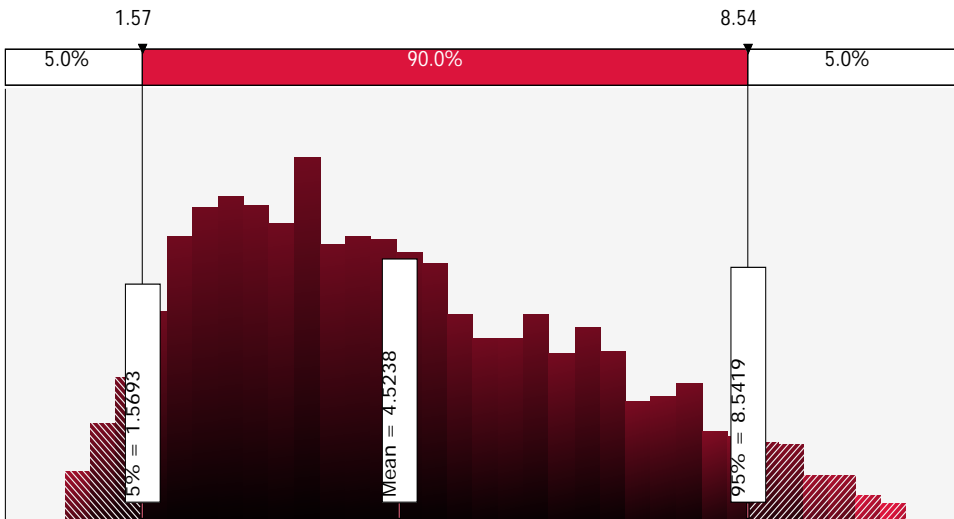


## Projected

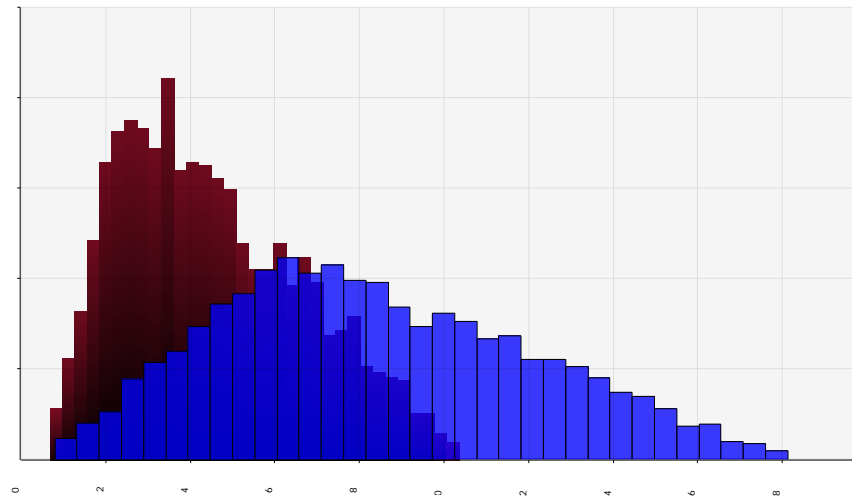
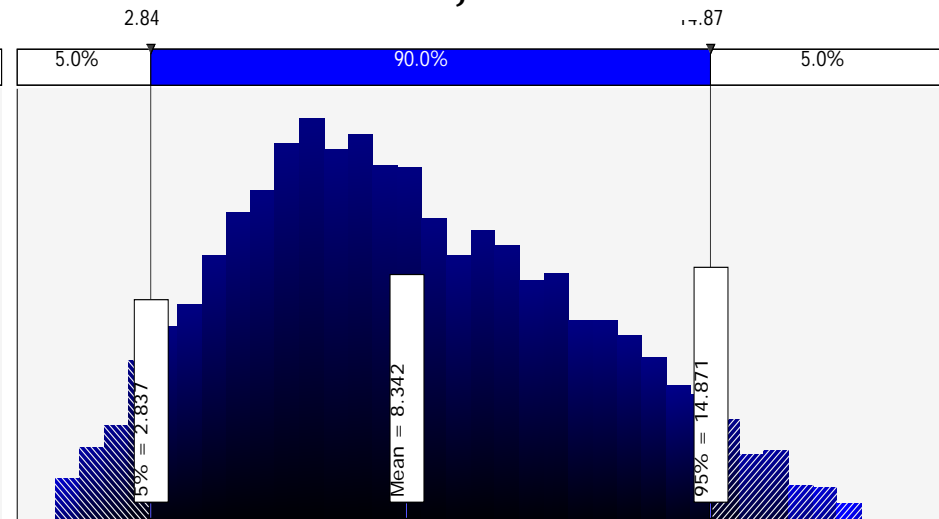


# FC\_Emergency Preparedness-All Hazards Response (per capita \$)

## Current

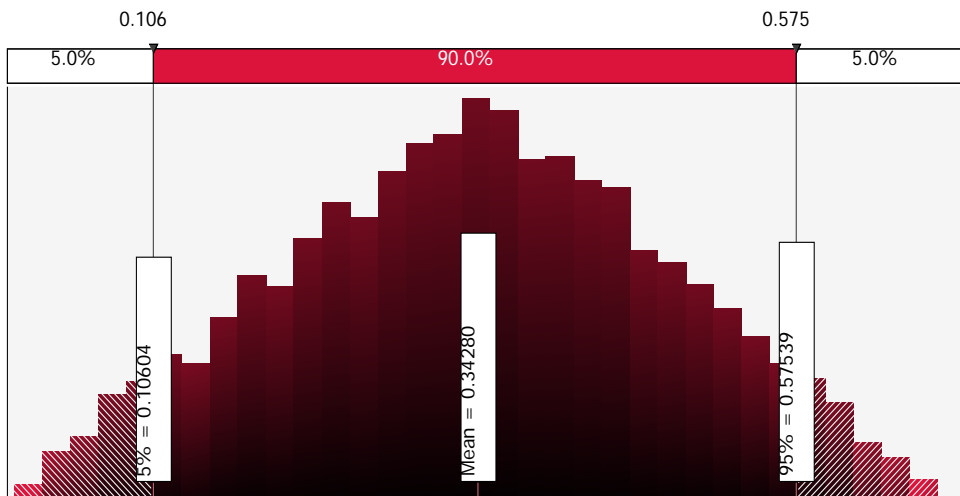


## Projected

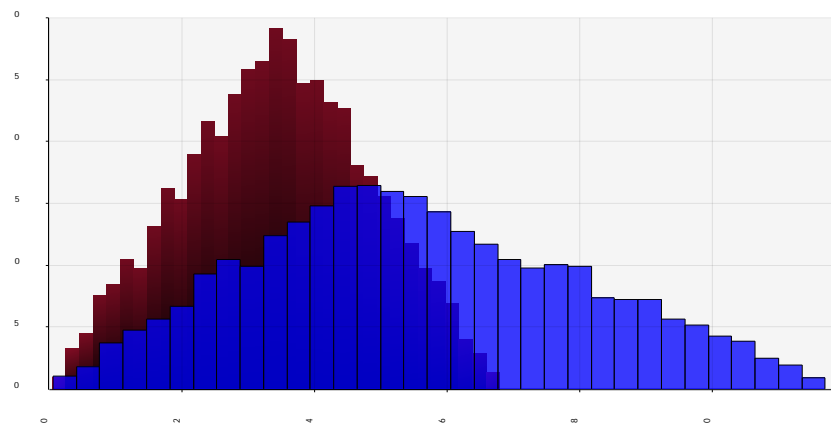
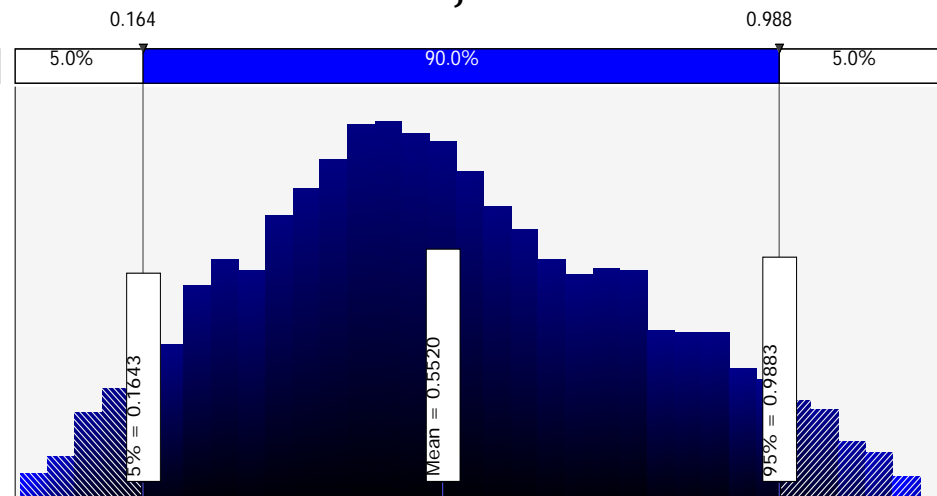


# FC\_Communications (per capita \$)

## Current

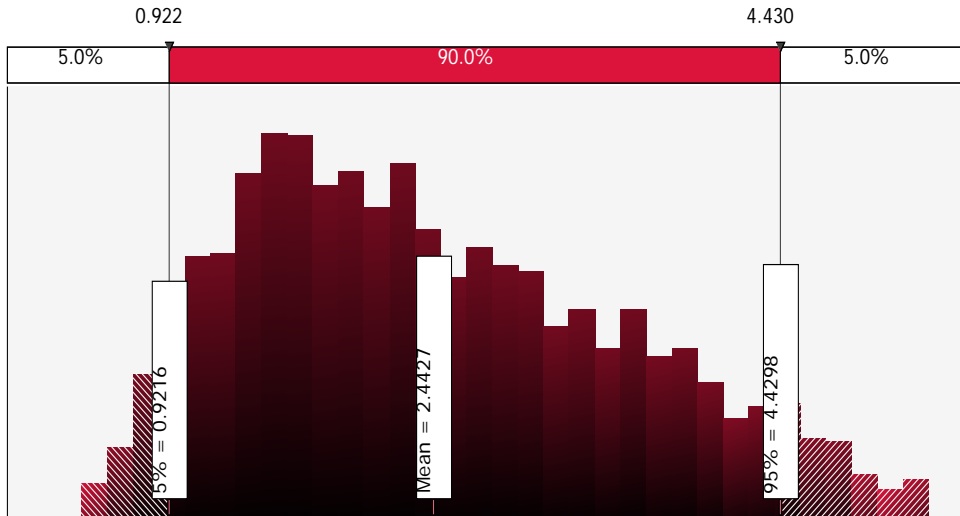


## Projected

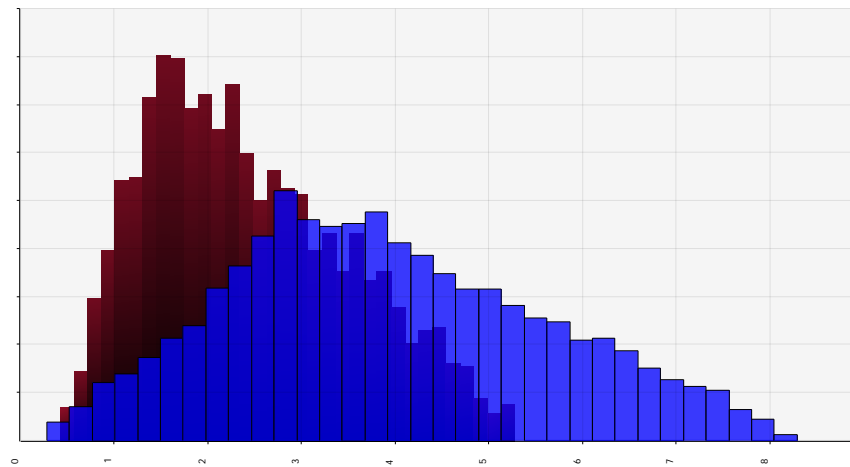
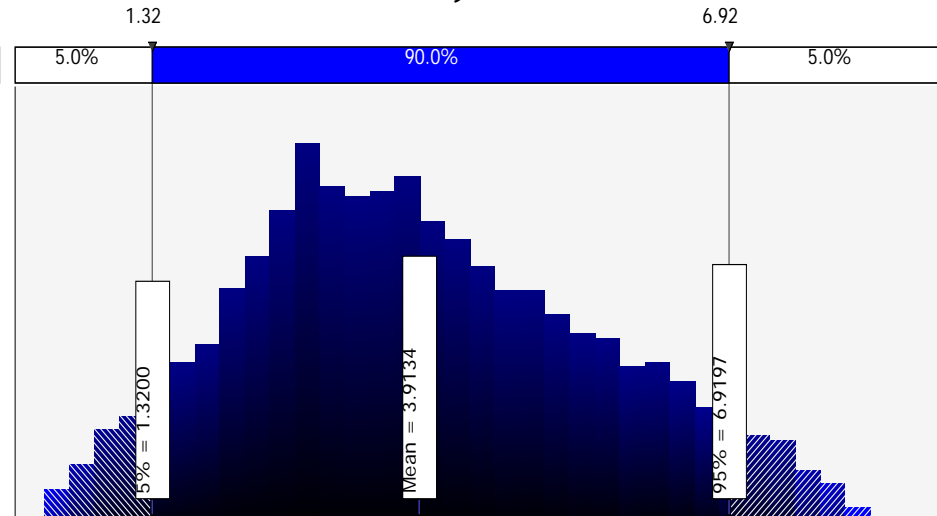


# FC\_Policy Development & Support (per capita \$)

## Current

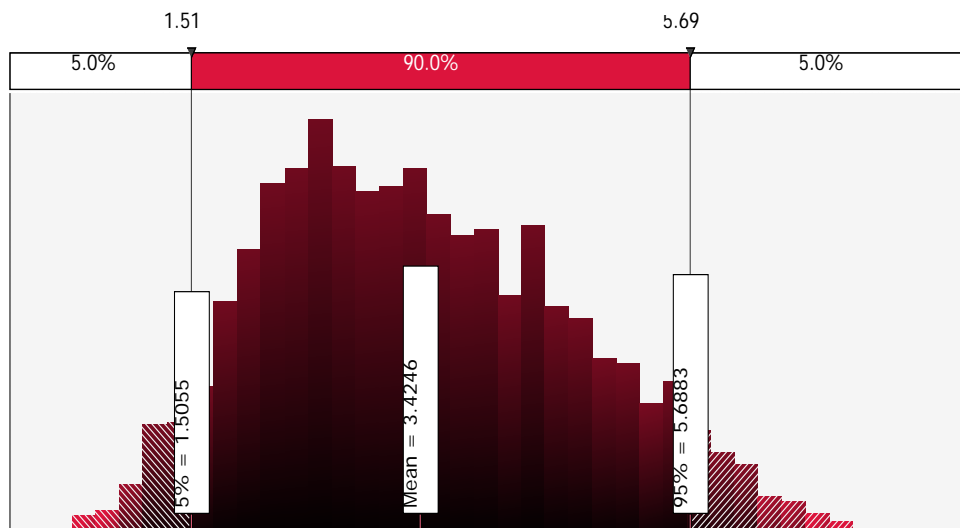


## Projected

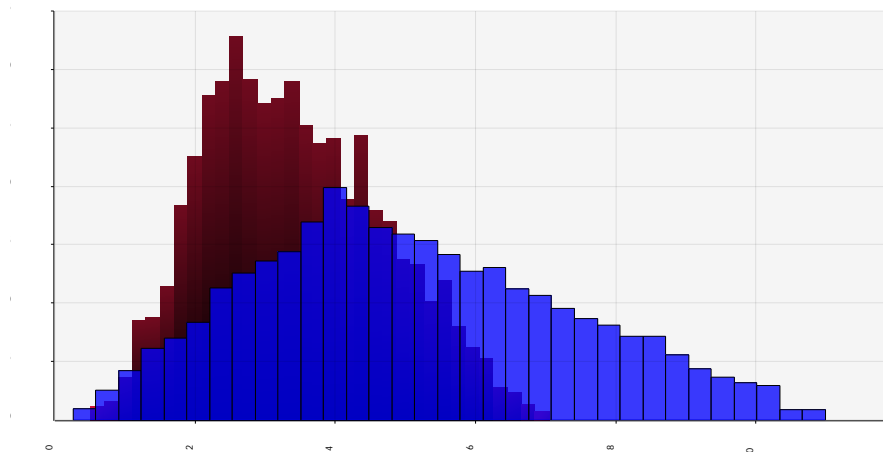
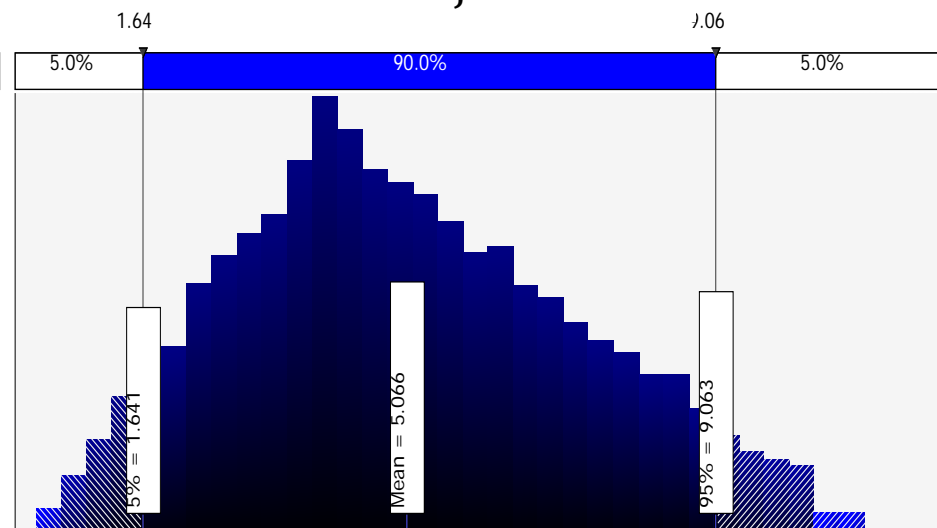


# FC\_Community Partnership Development (per capita \$)

Current

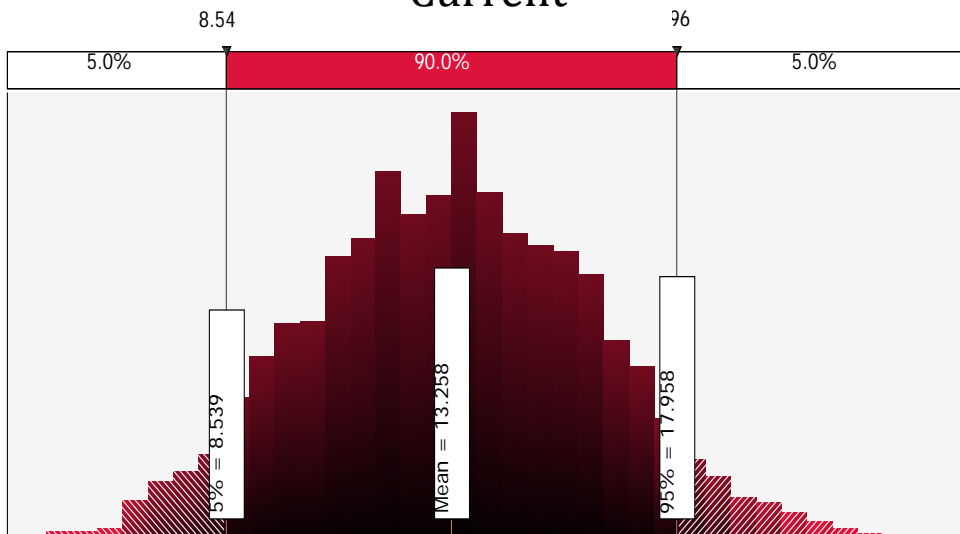


Projected

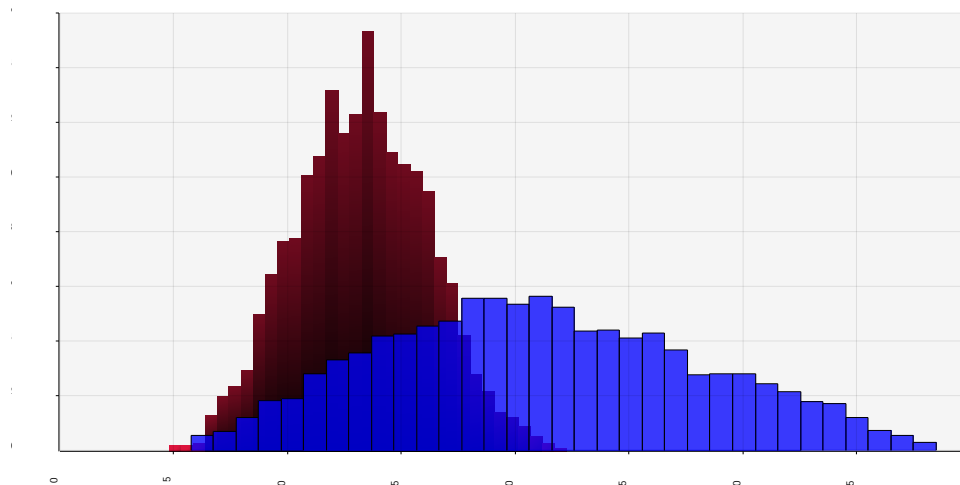
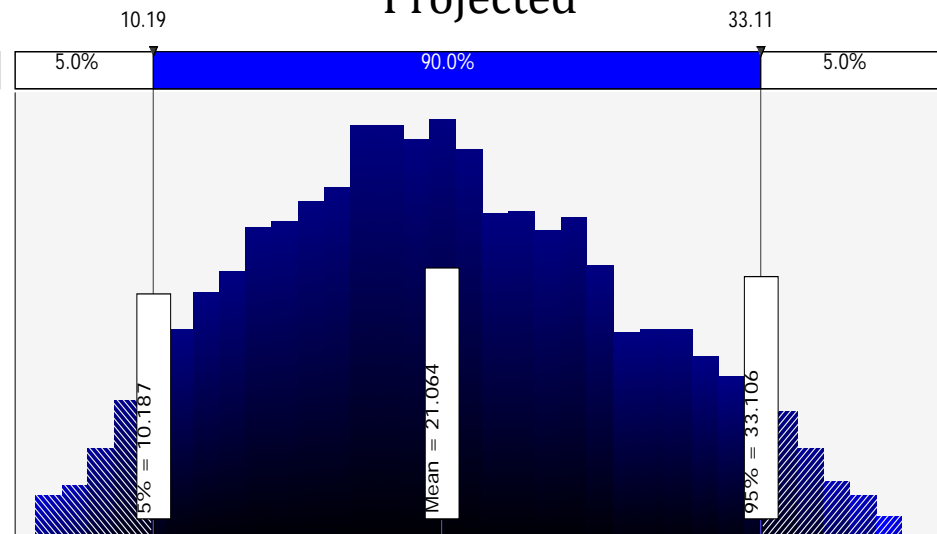


# FC\_Organizational Competencies (per capita \$)

Current

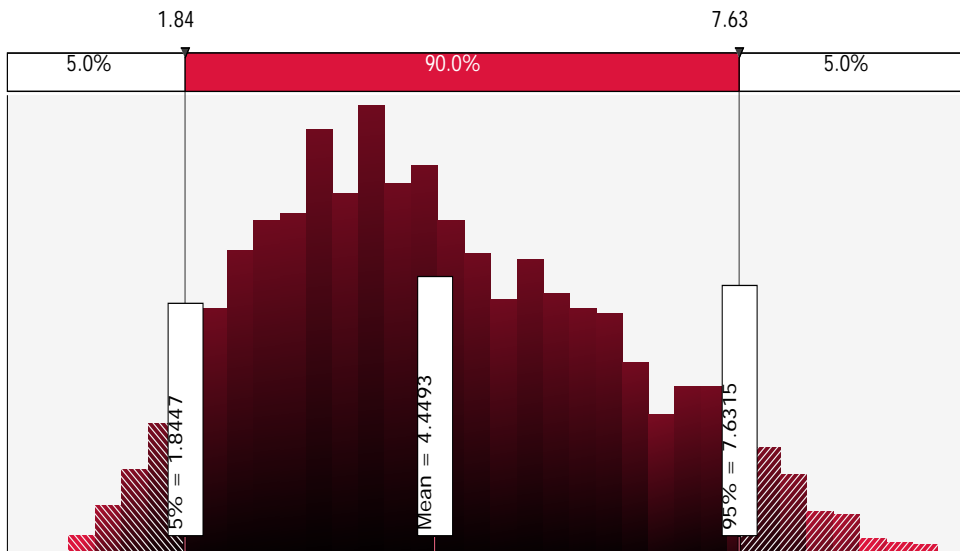


Projected

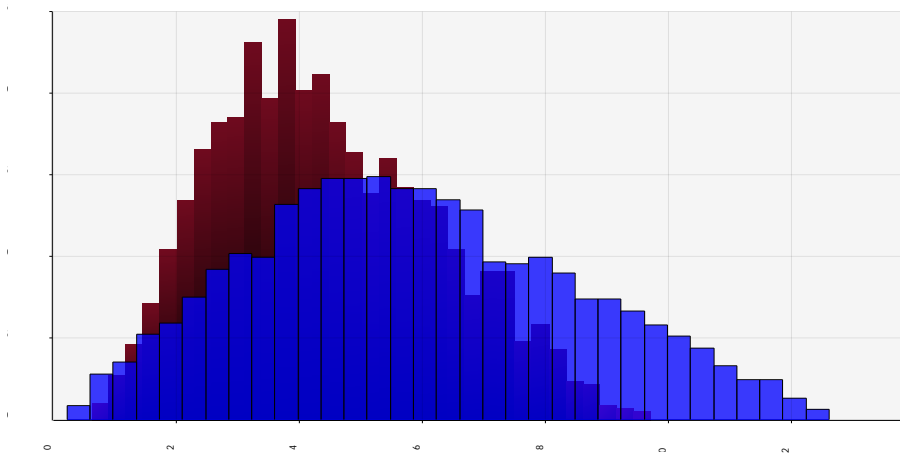
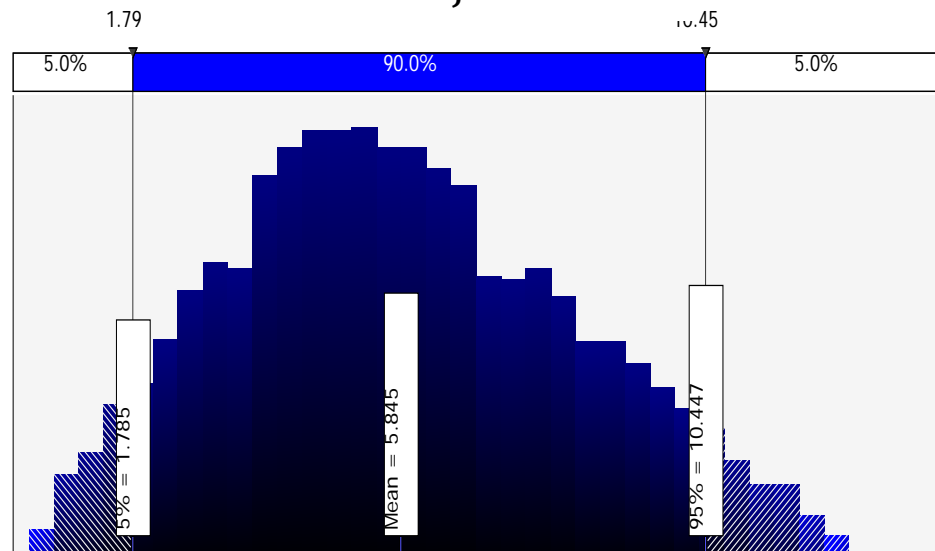


# Foundational Area (FA)\_Communicable Disease Control (per capita \$)

## Current

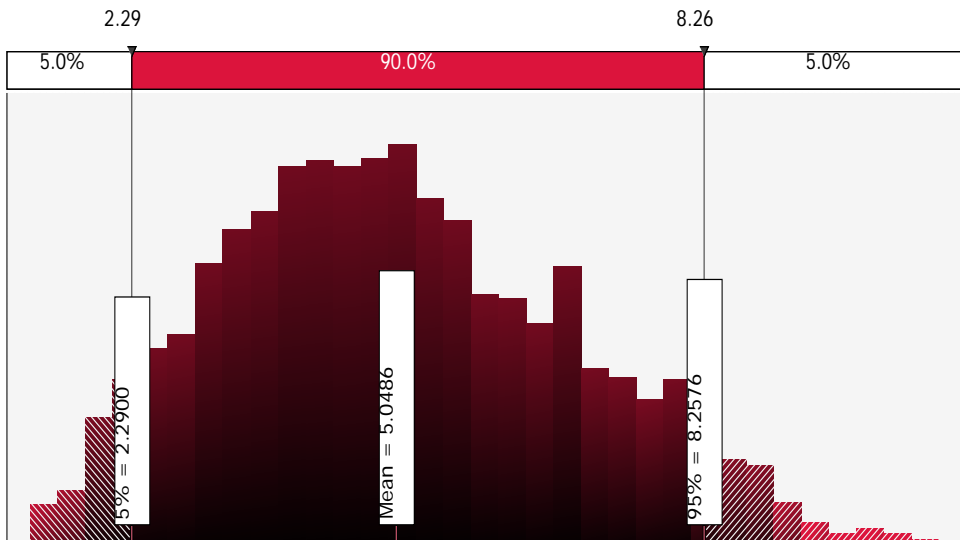


## Projected

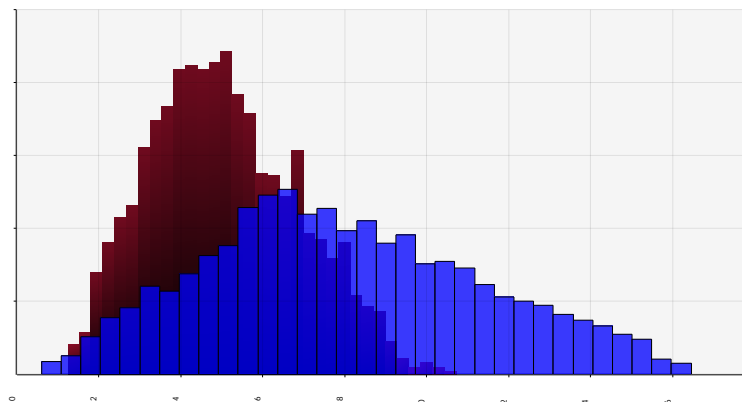
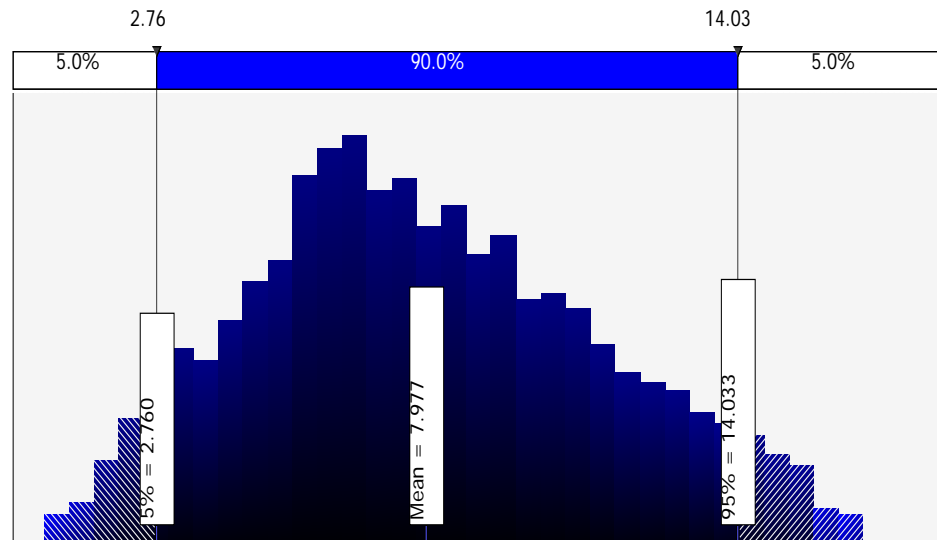


# FA\_Chronic Disease & Injury Prevention (per capita \$)

Current

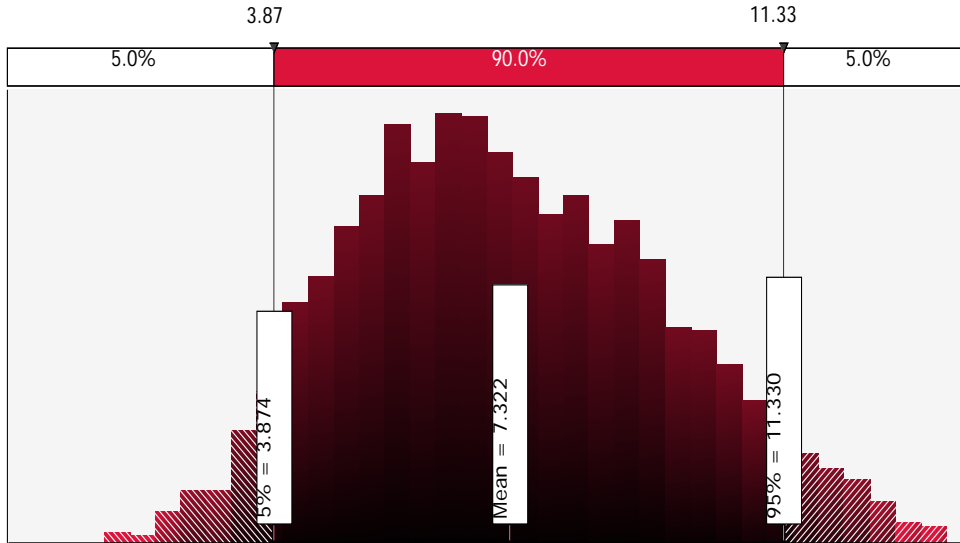


Projected

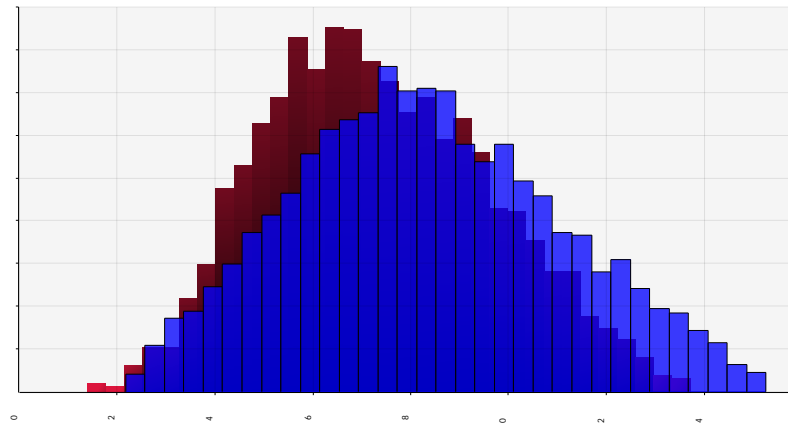
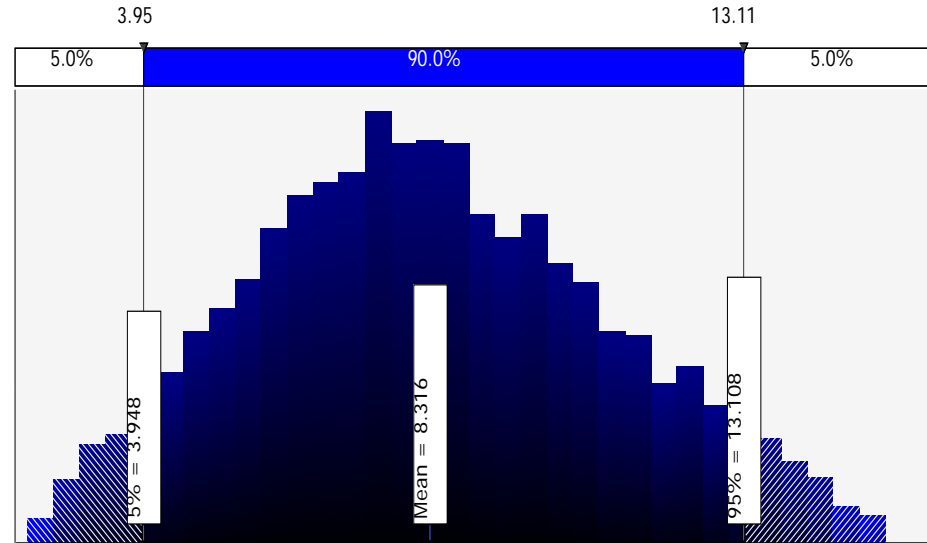


# FA\_Environmental Public Health (per capita \$)

Current



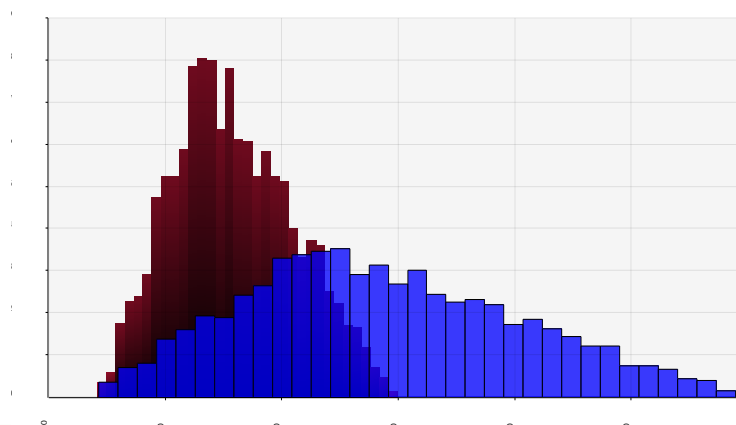
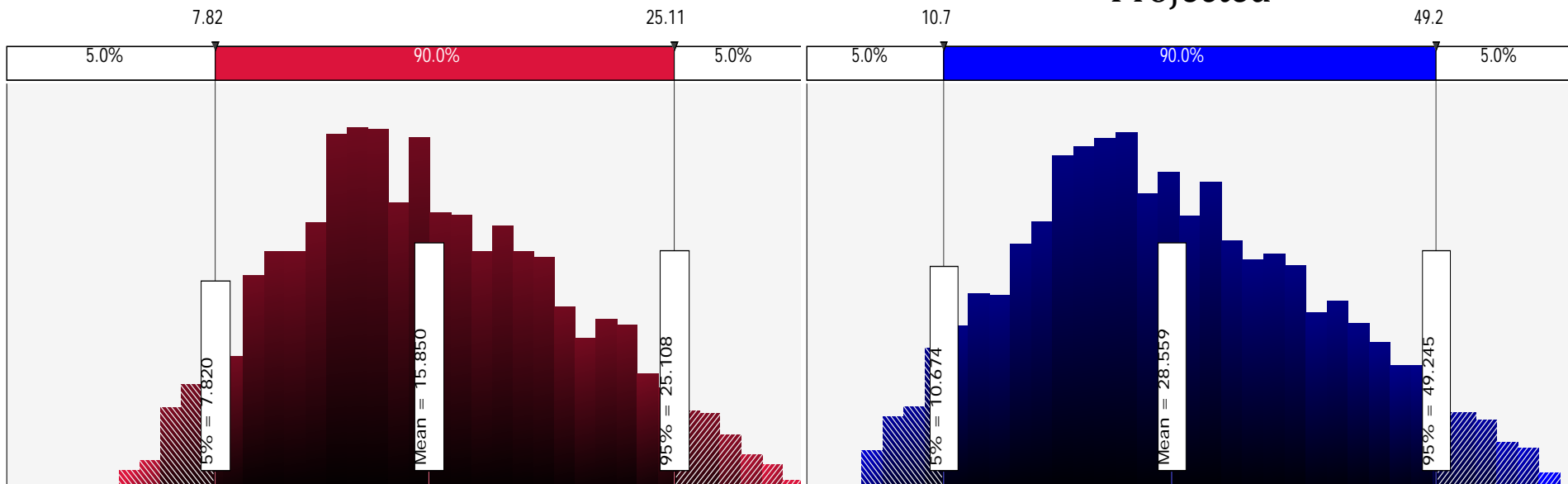
Projected



# FA\_Maternal Child and Family Health (per capita \$)

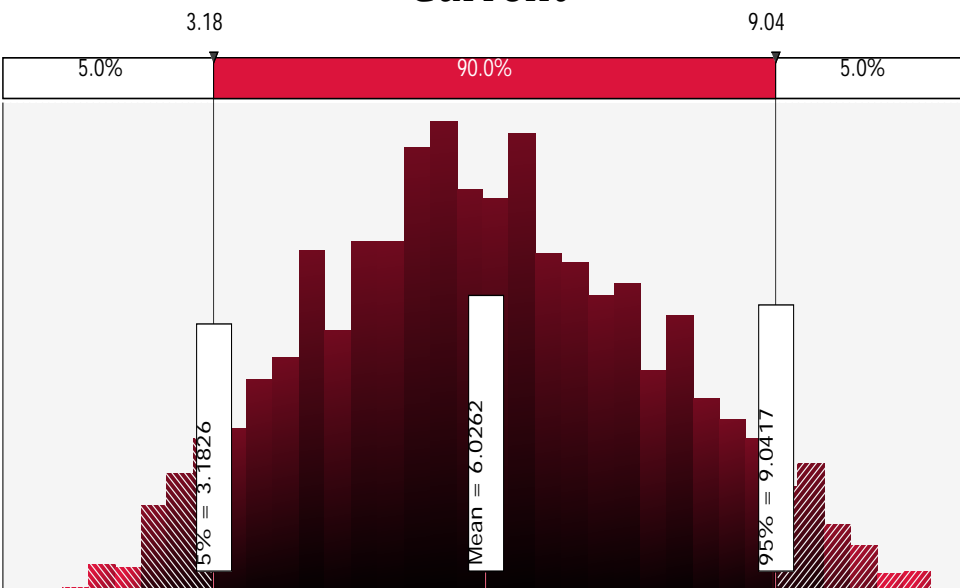
Current

Projected

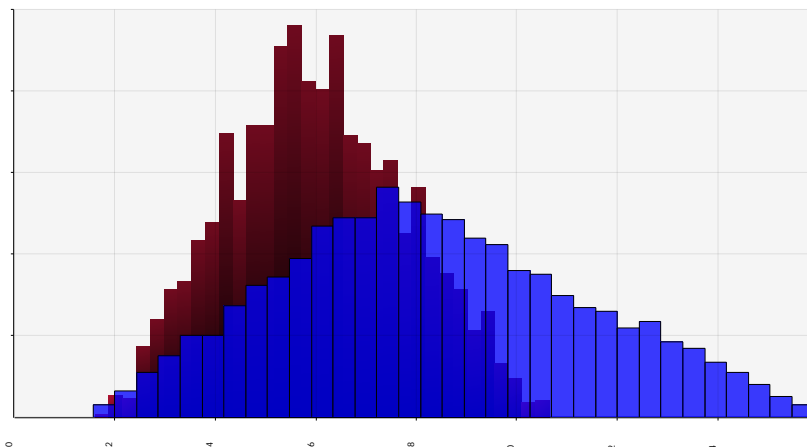
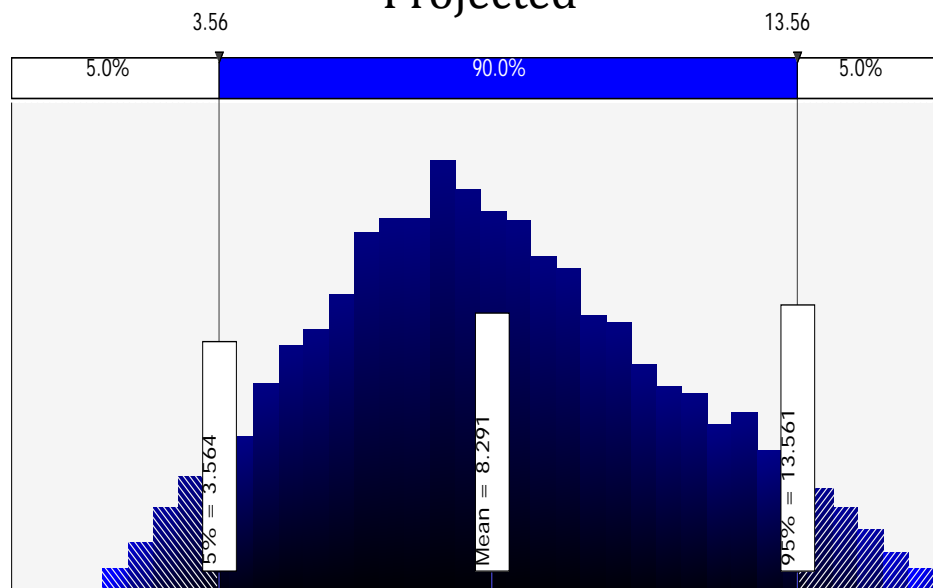


# FA\_Access to & linkage w/ Clinical Care (per capita \$)

## Current

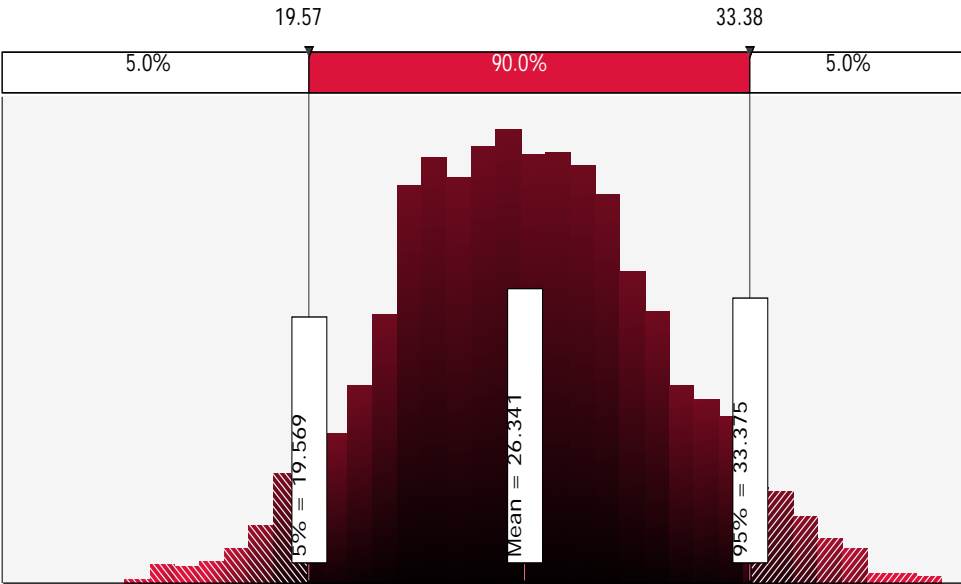


## Projected

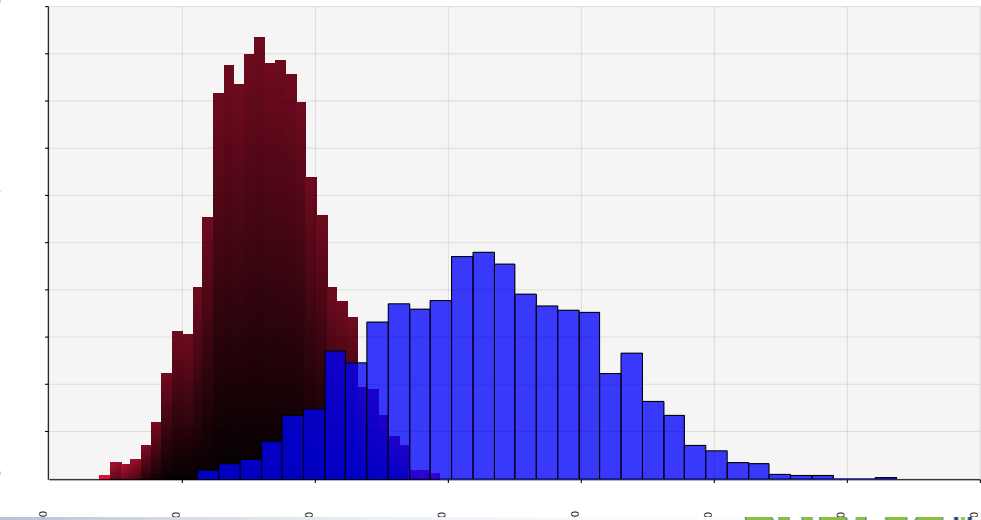
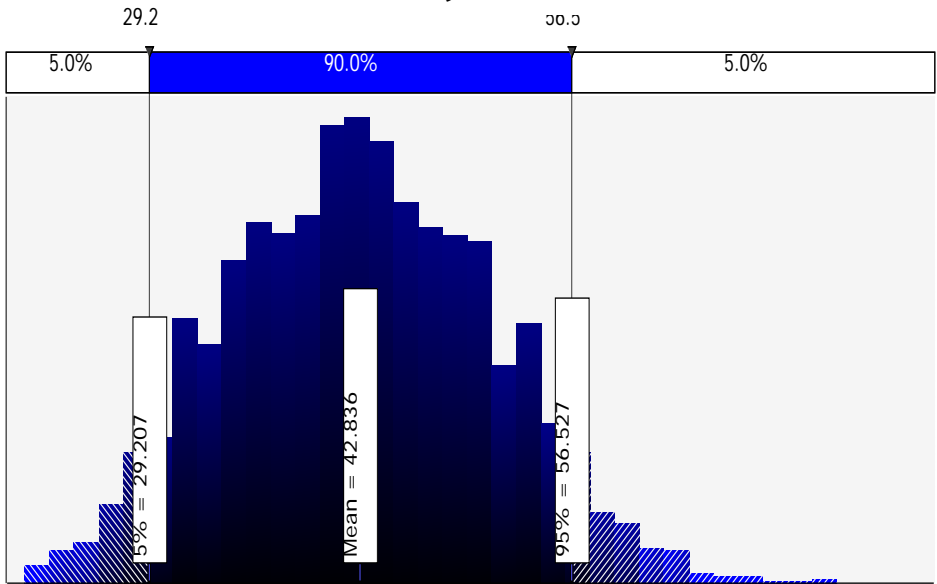


# Foundational Capability – Total Costs per capita (Current & Projected)

Current

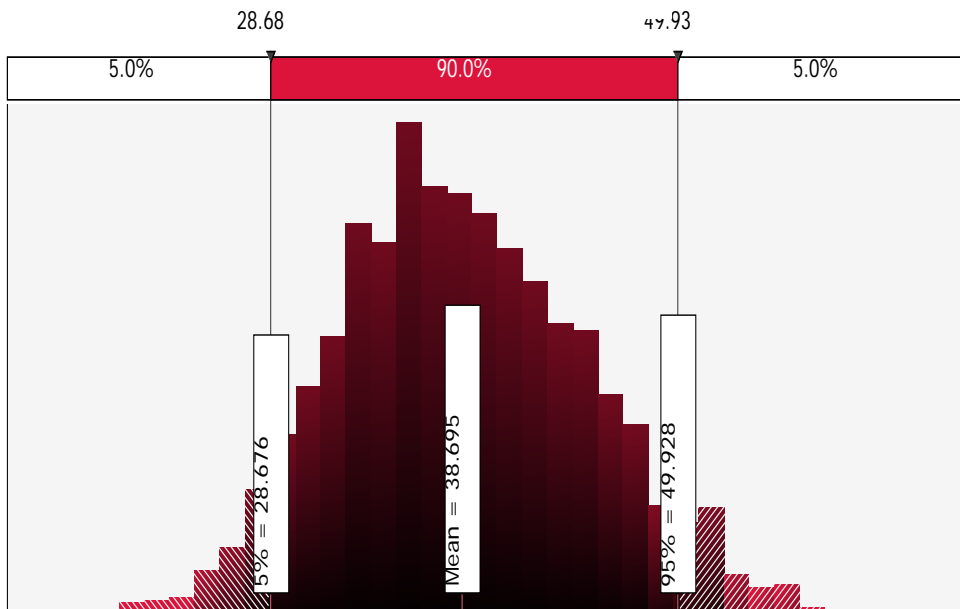


Projected

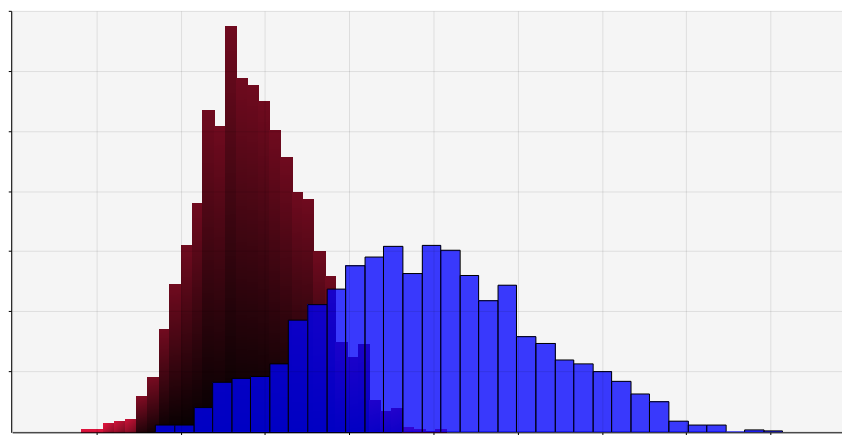
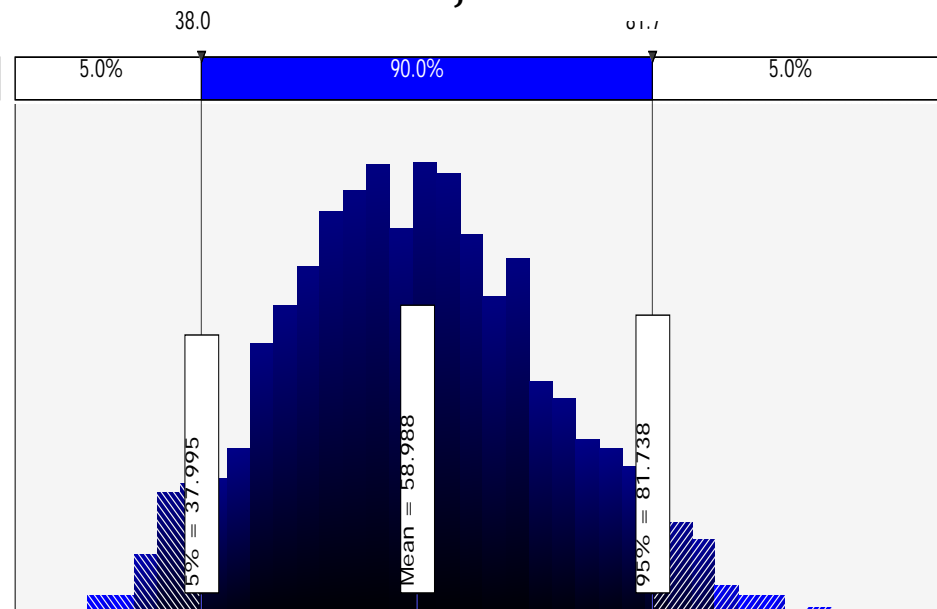


# Foundational Areas\_Total Costs per capita (Current & Projected)

## Current

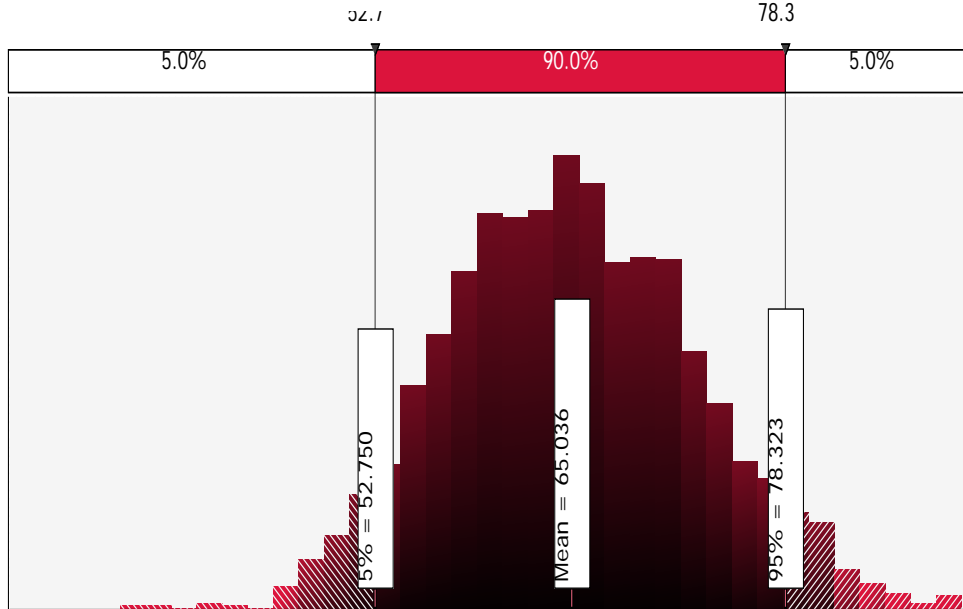


## Projected

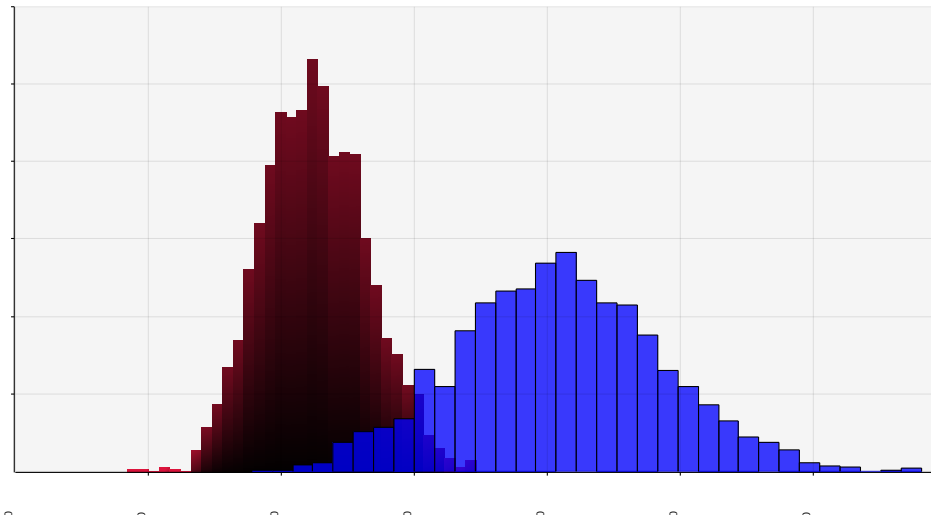
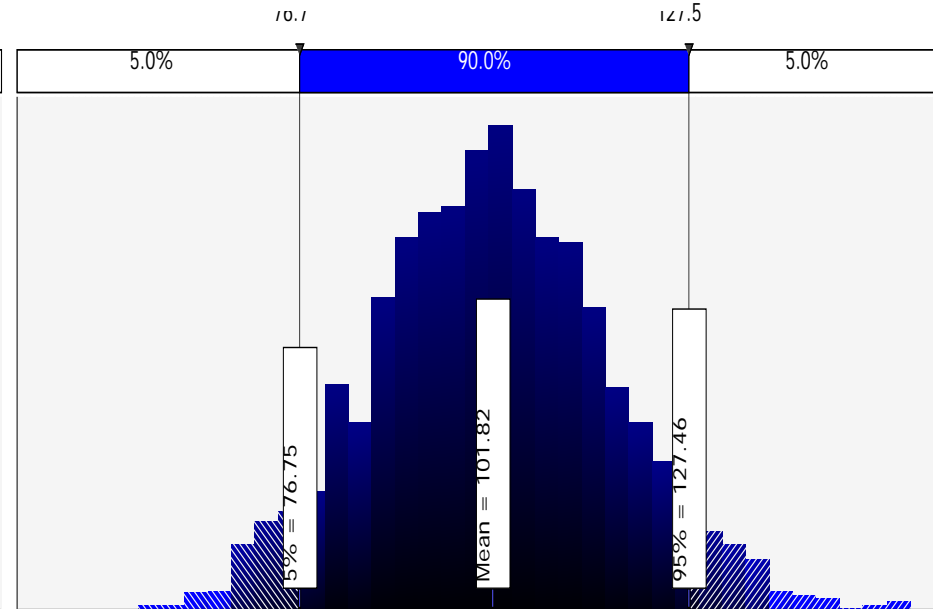


# Total Local Per Capita Cost Estimates: Current and Projected

## Current



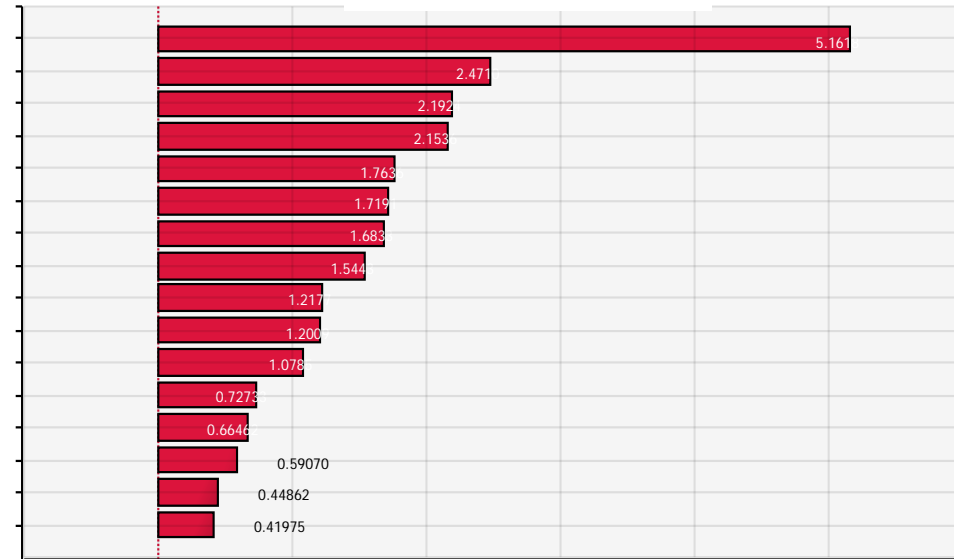
## Projected



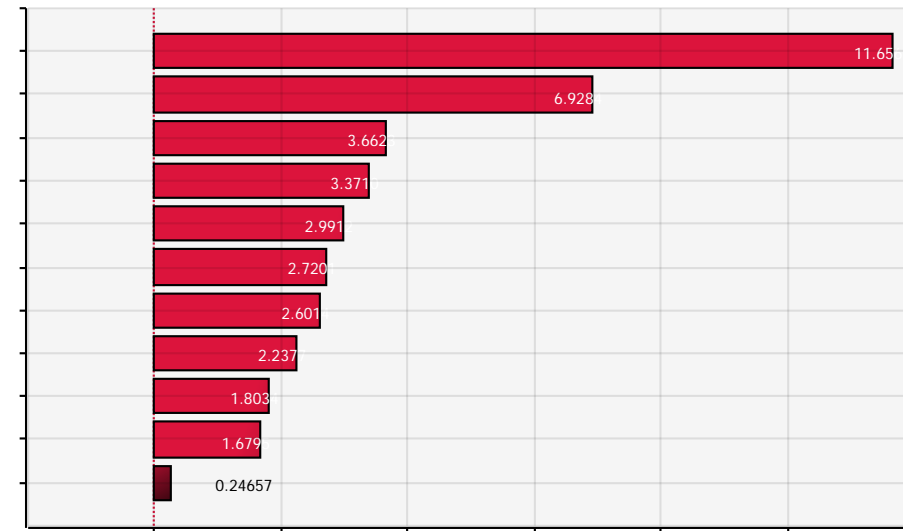
# How Sensitive Are Total Costs to FCs and FAs

Sensitivity Analysis  
for Total FPHS  
Costs per capita  
(current &  
projected) –  
standardized beta  
coefficients

Current



Projected



## Next Steps: National Estimates

- National stratified, nested sample of state and local jurisdictions
- Selection of **6 states** stratified by administrative structure:
  - Centralized: AR, SC
  - Shared: FL, GA (KY)
  - Decentralized: NY, CA (WA)
- Selection of **3 local jurisdictions** in each state, stratified by population: <50k | 50-299k | >=300k
- Supplement data already collected from KY, WA
- Web-based survey administration with telephone support

# For More Information



**Supported by The Robert Wood Johnson Foundation**

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