

# **Optimal Combination of Quantitative and Qualitative Methods of Evaluation.**

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- Our work is done at the request of the Congress or is mandated by public laws or committee reports. We also undertake research under the authority of the Comptroller General.

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- Auditing agency operations to determine whether federal funds are being spent efficiently and effectively.
- Reporting on how well government programs and policies are meeting their objectives.
- Performing policy analyses and outlining options for congressional consideration.
- Investigating allegations of illegal and improper activities.
- Issuing legal decisions and opinions, such as bid protest rulings and reports on agency rules.

## Qualitative and Quantitative Methods of Evaluation at GAO

Our objective, scope, and methodology approach encompasses a mix of qualitative and quantitative methods, such as:

- Reviews of relevant laws, regulations, policies, and guidance.  
Reviews of relevant (research) literature.
- Interviews of government officials, stakeholders, and experts.
- Surveys. Government, public, commercial data. Focus groups.
- Data methods:
  - Data reliability.
  - Descriptive data analytics.
  - Enhanced analytics (statistics, econometrics).

## Optimal Mix of Qualitative and Quantitative Methods

- Optimal mix of qualitative and quantitative methods depends on the facts of each case and the information that is available.
- Qualitative and quantitative methods are complementary.
- GAO's Applied Research and Methods team supplies specialist expertise on methods across 14 disciplines.
- Transparency, graphics, and documentation are essential.
- Adherence to Generally Accepted Government Auditing Standards and strict internal control processes ensure quality.

**Qualitative and Quantitative  
Methods of Evaluation  
in GAO Reports**

## **GAO-17-352. Youth with Autism**

- Under the Individuals with Disabilities Education Act (IDEA), school districts are required to provide services to assist youth with Autism Spectrum Disorder (ASD) in transitioning to adulthood.
- The Department of Health and Human Services' (HHS) Interagency Autism Coordinating Committee (IACC) is responsible for facilitating collaboration across its member agencies, including Education, to support research for transition-age youth with ASD.
- GAO examined (1) services and supports provided to assist youth with ASD in transitioning to adulthood, (2) key challenges in successfully transitioning, and (3) the extent to which federal agencies have collaborated to assist in the transition.

# Background on Autism Spectrum Disorder (ASD):

ASD is a complex development disorder. According to CDC, about 1 in 68 children had ASD in 2012 (about 1.5% of 8-year olds).

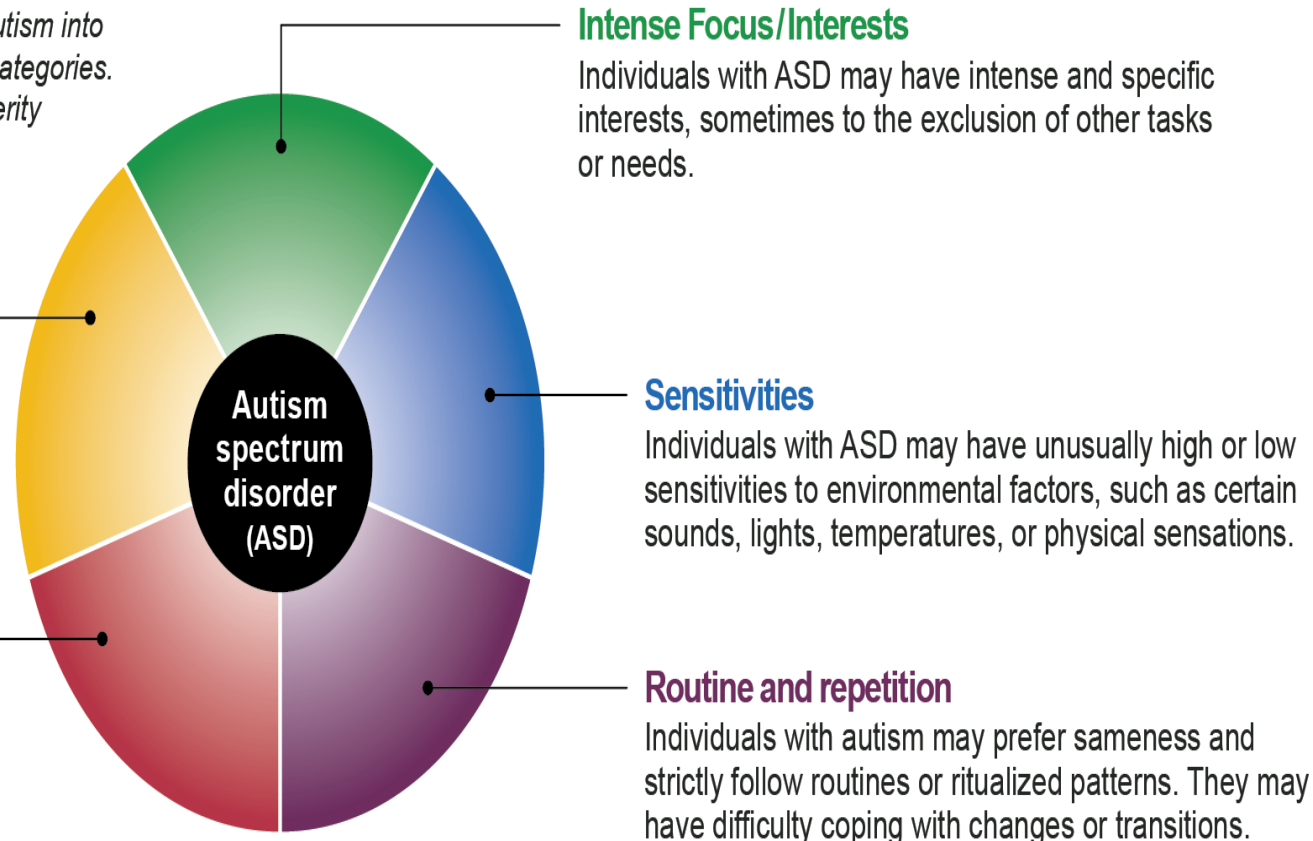
GAO grouped the characteristics associated with autism into five broad categories, with some overlap between categories. Autism is highly individualized, so the type and severity of characteristics experienced varies from person to person.

## Social impediments

Social impediments may range from difficulties discussing emotions, making friends, or sharing interests to a complete disinterest in other people.

## Communication difficulties

Difficulties with verbal and/or nonverbal communication may limit the ability to speak, understand and use gestures, or carry on a conversation.





## **Individuals with Disabilities Education Act of 2004 (IDEA):**

- In elementary and secondary school, students with disabilities—including students with autism—are entitled to receive special education and related services through IDEA, which is overseen at the federal level by the Department of Education.
- IDEA requires states to make a free appropriate public education in the least restrictive environment available to eligible children with disabilities as a condition of grant eligibility.
- Education provides formula grants to assist states and school districts to pay the excess costs of providing special education services to eligible students with disabilities, beginning at age 3 and lasting through 21, depending on state law or practice.

## Qualitative Methods of Evaluation

- Interviews with state officials, local service providers in 3 selected states (AZ, NJ, SC) that include a variety of LEAs and initiatives. Conducted site visits in AZ, NJ. Interviewed state, local officials.
- 5 discussion groups with families and youth with ASD in AZ and NJ, with assistance from state organizations with outreach services. Used trained facilitator and interview protocol designed for ASD.
- Reviewed federal laws, regulations. Interviewed federal agencies.
- Interviewed representatives of 3 businesses that have initiatives to hire individuals with ASD and national disability advocacy groups.
- Conducted performance audit from 11/2015 through 04/2017.

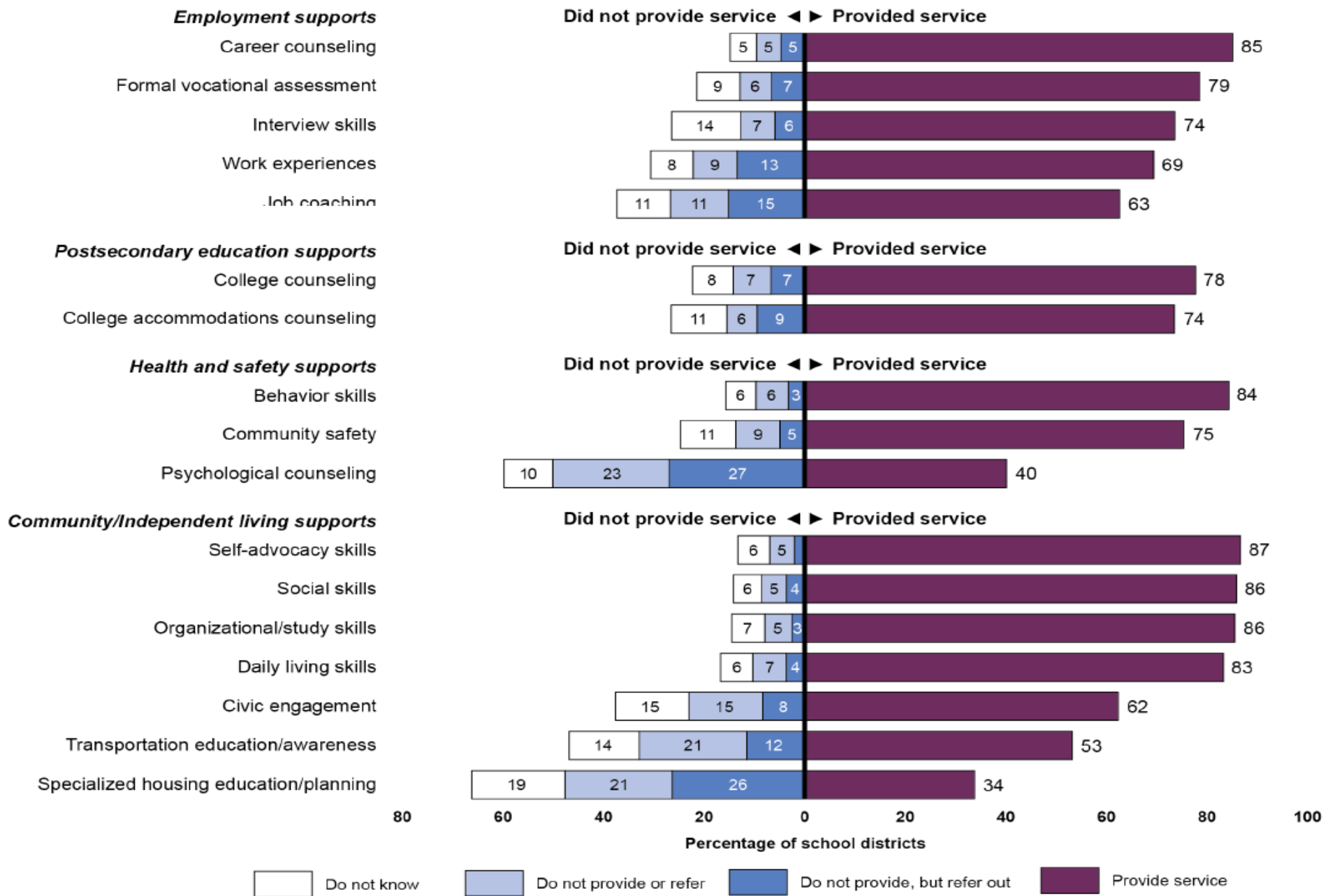
## Web-Based Survey of School Districts: Design

- Generalizable, stratified random sample of U.S. local educational agencies (LEAs, school districts) serving high school-aged students.
- Survey had questions about services and supports school districts provided to ASD students aged 16 to 21 in 2015-16 school year.
- Department of Education data: 12,955 LEAs in 2013-14 school year. Defined 13 mutually exclusive strata based on district size, urban, poverty classifications. Selected largest 100 LEAs with certainty. Build sample size to achieve precision levels of  $\pm 10\%$  at the 95% confidence level for 6 sub-population estimates. Increased sample size within each stratum for an expected response rate of 70%.
- Final stratified random sample size: 606 LEAs (school districts).

## Web-Based Survey of School Districts: Results

- 18 of 606 sampled LEAs were closed or did not serve HS students. Valid responses from 414 of other 588 LEAs (70%).
- Analyzed potential sources of nonresponse bias by (1) response propensity method along characteristics, (2) comparing weighted estimates from (non-)respondents to known population values.
- Minimized non-sampling errors, using pretesting draft instruments and web-based administration system. All % estimates in results have a margin of error of at most  $\pm 11.8\%$  (using 95% C.I.).
- Analyze differences between LEAs by comparing weighted survey estimates for LEAs and conducting multivariate logistic regression analyses (including controls) to confirm statistical significance.

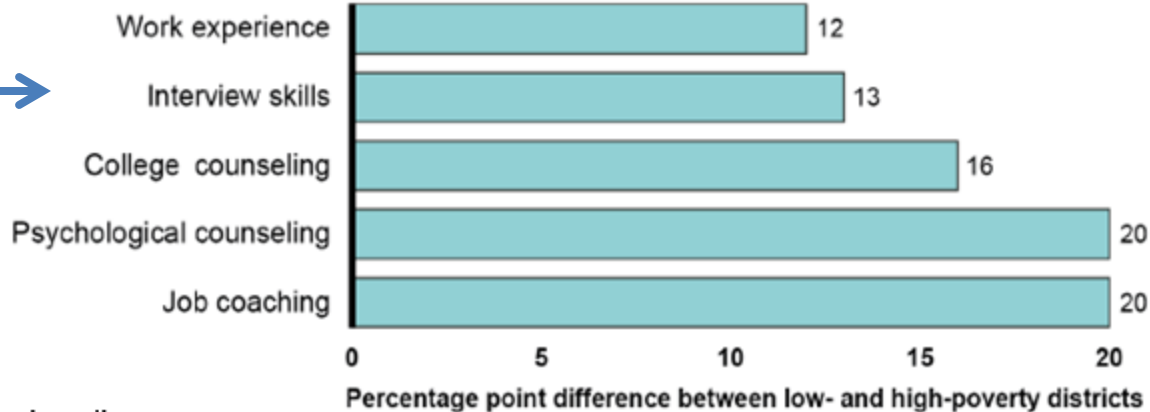
**Figure 3: Estimated Percentage of School Districts That Reported Providing Transition Services to Youth with Autism Ages 16-21, School Year 2015-16**



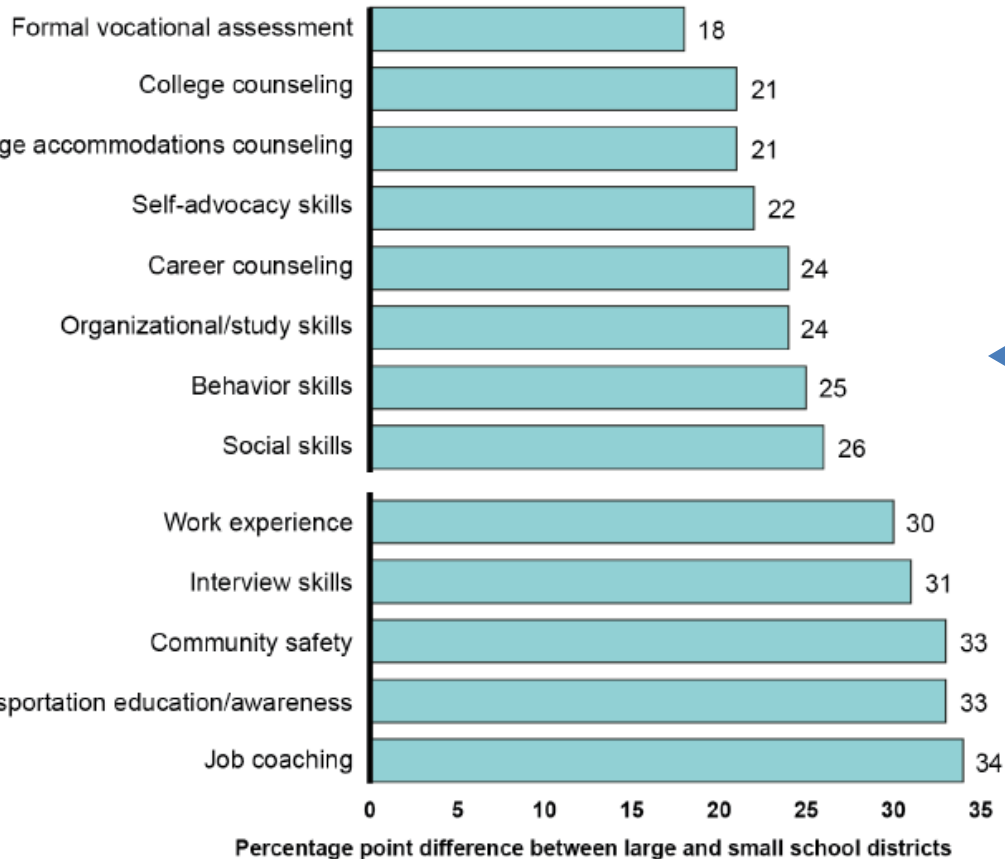
**A Higher % of Low-Poverty School Districts Provided Certain Transition Services, Compared to High-Poverty School Districts**



**Differences between low-poverty and high-poverty school districts in providing services**

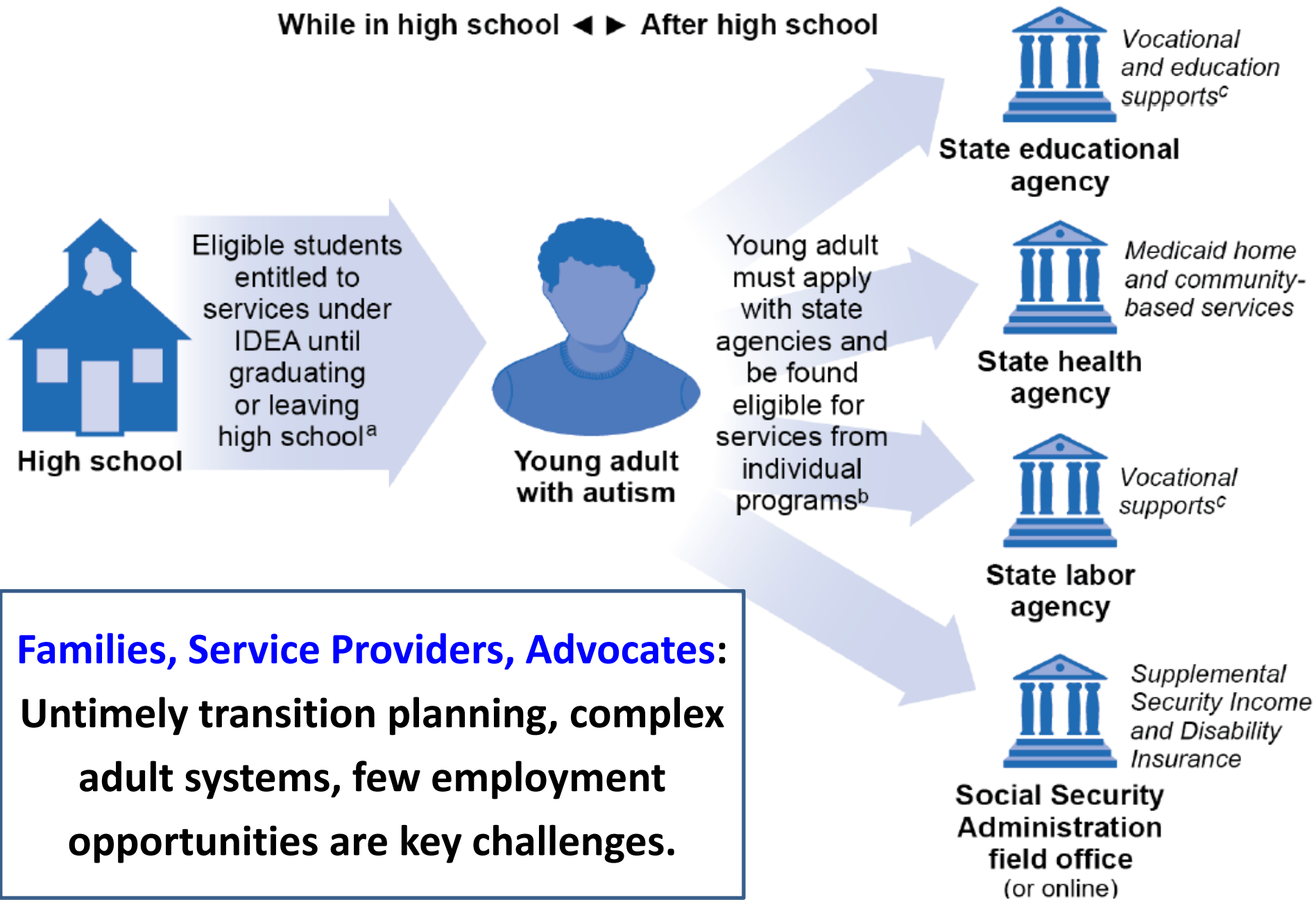


**Differences between large and small school districts in providing services**



**A Higher % of Large School Districts Provided Transition Services Compared to Small Districts, School Year 2015-16**

**Figure 6: Students Move from Services Provided through Their High Schools to Services Delivered through Multiple Programs** Source: GAO analysis of agency documentation, including postings and publications. | GAO-17-352



## Complementarity in qualitative and quantitative evidence:

- While almost all school districts reported beginning transition planning for students by age 16, the majority of school districts reported age 14 or younger would be the most beneficial age. These results are consistent with views of several stakeholders.
- Stakeholders cited challenges to navigating the transition from the public school system to adult service systems. This is consistent with survey results: 70% of school districts identified *'lack of assistance navigating adult service systems'* as challenge.
- Specific concerns included: Waiting list for services, lack of service options available, lack of trained services, and cost.



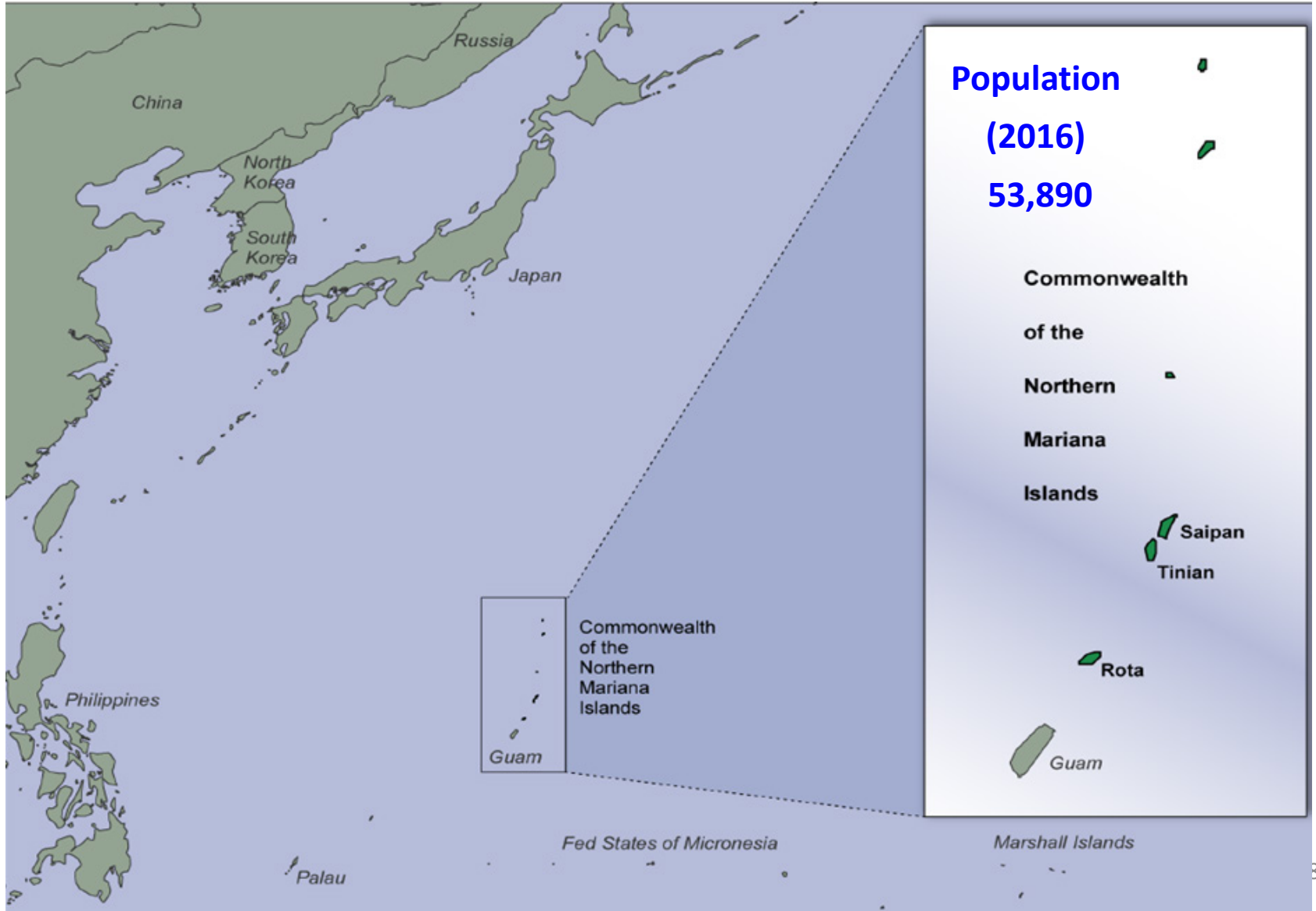
## **Federal Collaborative Efforts Have Missed Opportunities**

- The IACC has not regularly engaged key federal agencies.
- Federal agencies have identified priorities for supporting transition-age youth, but there lacks plans for implementation.

### **GAO Recommendations for Executive Action:**

- GAO made 3 recommendations to federal agencies, including
  - one to Education to examine the merits and implications of amending IDEA to require earlier transition planning, and
  - one to Health and Human Services (HHS) to enhance collaboration with non-IACC member agencies.

# GAO-17-437. Commonwealth of the Northern Mariana Islands Implementation of Federal Minimum Wage & Immigration laws



## Background:

- U.S. took control of Northern Mariana islands during WW2.
- 1976: Covenant with U.S. established the island's territory status as a self-governing commonwealth in political union with U.S.
- Covenant initially exempted the CNMI from certain federal minimum wage provisions and immigration laws.
- In 2007, the minimum wage provisions of the Fair Labor Standards Act of 1938 were applied to the CNMI, requiring the minimum wage in CNMI to rise incrementally to federal level.
- The Consolidated Natural Resources Act of 2008 applied federal immigration law to the CNMI, following a transition period.

- The 2008 law established federal control of CNMI immigration. It required the U.S. Department of Homeland Security (DHS) to create a transitional work permit program for foreign workers in the CNMI and to decrease the number of permits issued annually, and presently requires that DHS reduce them to 0 by 12/31/2019.
- In 2011, DHS created a CW-1 permit program for foreign workers.
- **GAO was asked to review:** (1) changes in the labor market since federally mandated minimum wage increases; (2) the potential economic impact of reducing the number of foreign workers to zero; (3) federal and CNMI efforts to address labor challenges.

## Qualitative Methods:

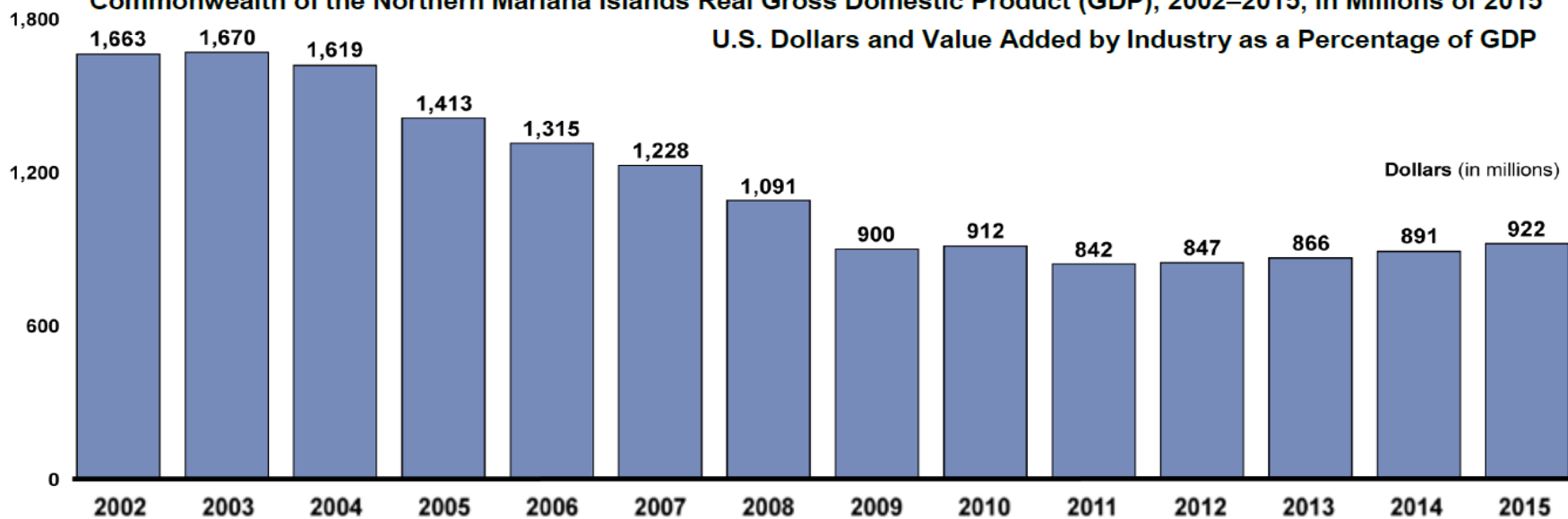
- Obtained and analyzed agency data and documents.
- Interviewed officials and relevant organizations in U.S. and CNMI.
- Conducted fieldwork and discussion group sessions in the CNMI.
- Conducted semi-structured interviews with selected employers, CW-1 workers, U.S. workers currently employed in the CNMI, and students or graduates of the CNMI's job training programs.

## Quantitative Methods:

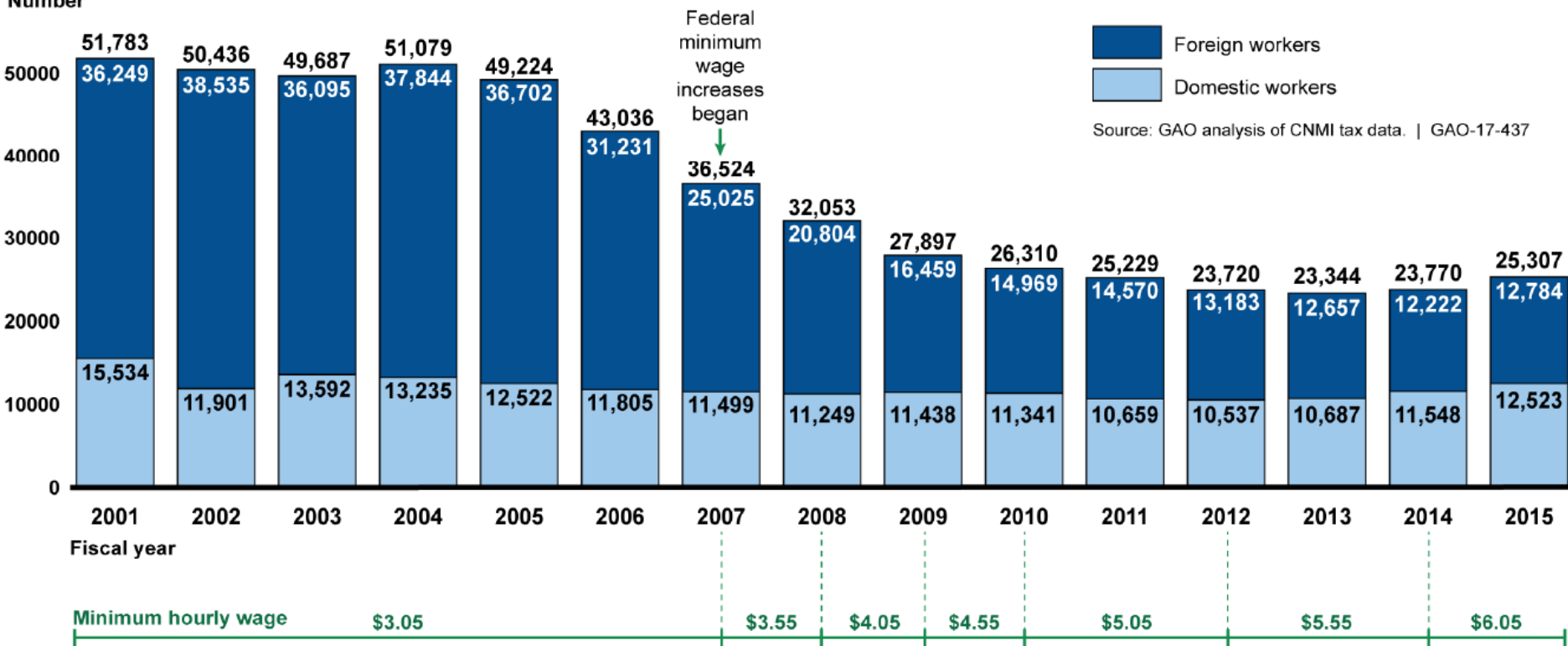
- Descriptive analysis of economic data (labor, wages, growth).
- Developed Cobb-Douglas economic model to simulate how CNMI's GDP would change if the number of CW-1 workers reduced to 0.

# Commonwealth of the Northern Mariana Islands Real Gross Domestic Product (GDP), 2002–2015, in Millions of 2015

U.S. Dollars and Value Added by Industry as a Percentage of GDP



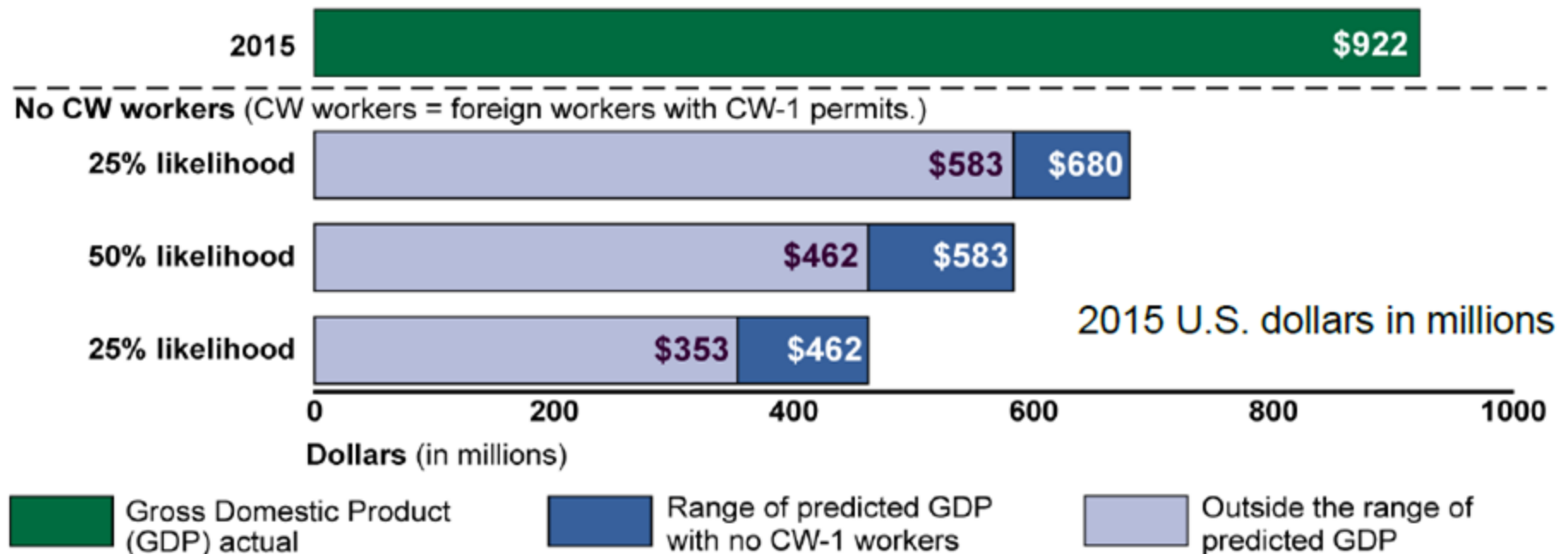
## Number



Cobb-Douglas production function  $Y = AK^a(\epsilon FW^{-p} + (1-\epsilon)RW^{-p})^{-(1-a)/p}$

In this model, Y is output, K is capital, A is a constant, FW is the foreign workforce, and RW is the resident workforce. The parameters that control both the substitutability and the factor shares of resident and foreign labor are  $p$  and  $\epsilon$ . In addition, the elasticity of output with respect to “total workforce” is given by  $(1-a)$ .

**Figure 7: Estimated Decline of 2015 Gross Domestic Product of the Commonwealth of the Northern Mariana Islands (CNMI) in Response to Zero CW-1 Permits**



Source: GAO analysis of U.S. Department of Commerce data. | GAO-17-437

## Complementarity in qualitative and quantitative evidence:

### Demand for labor exceeds supply of U.S. workers.

- Growing demand for construction, hospitality workers (tourism).
- Approved planned projects will require thousands of workers.
- Local supply of (unemployed and future) labor is insufficient.
- While some employers report successes, others report facing multiple challenges in efforts to recruit and retain U.S. workers.





- **Federal and CNMI efforts to address labor challenges include:**
  1. Job training programs offered by Northern Marianas College, Northern Marianas Trades Institute, and the CNMI's Public School System.
  2. Employment assistance funded by the U.S. Department of Labor and implemented by the CNMI's Department of Labor.
  3. Technical assistance by the U.S. Department of the Interior.
- GAO concluded its report with an overview of the recently completed 902 consultative process between the CNMI and the U.S. that resulted in recommendations to Congress and DHS.