



NDPBA

BELIZE DISTRICT RISK PROFILES

SUBNATIONAL ASSESSMENT RESULTS



BELIZE

BELIZE

NDPBA DISTRICTS PROFILE

BELIZE BELIZE

CAPITAL: BELIZE CITY

Area: 3,711 km²

The Belize District is located in the Eastern region of Belize. This District is divided into 38 Cities, Towns and Villages: Belize City (The Capital), San Pedro and the main Cities and Towns. The District borders Corozal to the North, Orange Walk and Cayo to the west, Stan Creek to the south and the Atlantic Ocean to the east. The main economic sources for the country of Belize continues to be tourism, sugar, banana, citrus, marine products and crude oil.



RISK AND VULNERABILITY COMPONENT SCORE



MULTI-HAZARD RISK (MHR) - Very Low
Score: 0.354 • Rank: 6/6



RESILIENCE (R) - Extremely High
Score: 0.591 • Rank: 1/6



MULTI-HAZARD EXPOSURE (MHE) - Low
Score: 0.145 • Rank: 5/6



VULNERABILITY (V) - Low
Score: 0.421 • Rank: 5/6



COPING CAPACITY (CC) - Extremely High
Score: 0.602 • Rank: 1/6



Population (2010 Census)
95,291



Population in lowest wealth quintile
4.3%



Population with no secondary school education
52.7%



Households with unimproved water access
7.42% households



Infant mortality rate (per 1,000 live births)
10.3

*For more information on data and components please visit: <https://bit.ly/2LqVoUO>



MULTI-HAZARD EXPOSURE (MHE)

RANK: 5 / 6 DISTRICTS
SCORE: 0.145



ESTIMATED POPULATION AND CAPITAL EXPOSED TO EACH HAZARD:



Earthquake

0.0%

0

-

Critical Infrastructure Exposed:
0.0%



Extreme Heat

4.1%

4,461

\$31.5 Million

Critical Infrastructure Exposed:
8.9%



Flood

22.8%

24,967

\$488.6 Million

Critical Infrastructure Exposed:
21.3%



Landslide

0.4%

378

\$387,600

Critical Infrastructure Exposed:
0.6%



Storm Surge

37.6%

41,079

\$35.4 Million

Critical Infrastructure Exposed:
28.4%



Tropical Cyclone Winds

100.0%

109,356

\$1.2 Billion

Critical Infrastructure Exposed:
100.0%



Wildfire

20.9%

22,822

\$299 Million

Critical Infrastructure Exposed:
20.7%



VULNERABILITY (V)

RANK: 5 / 6 DISTRICTS ASSESSED
SCORE: 0.421

Vulnerability in Belize is primarily driven by Vulnerable Health Status and Environmental Stress. The bar charts indicate the socioeconomic themes contributing to the overall Vulnerability score.



Environmental Stress SCORE: 0.591 RANK: 4/6 DISTRICTS ASSESSED



7.1%

Tree cover loss

-7.0%

Projected changes in annual precipitation

23.7%

Decline in land productivity



Vulnerable Health Status SCORE: 0.793 RANK: 2/6 DISTRICTS ASSESSED



209.11

TB infections per 10k persons

322.98

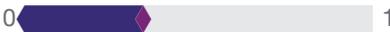
Dengue incidence per 100k persons

27.95

Malaria incidence per 100k persons



Clean Water Vulnerability SCORE: 0.346 RANK: 5/6 DISTRICTS ASSESSED



7.42%

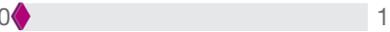
Households with unimproved water access

2.87%

Households with unimproved sanitation



Information Access Vulnerability SCORE: 0.01 RANK: 6/6 DISTRICTS ASSESSED



91.4%

Adult literacy

97.9

Primary to secondary school transition rate

16.7%

Working population with no secondary school education

16.7%

Households without radio access

9.7%

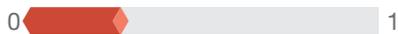
Households without television access

79.0%

Households without Internet access



Economic Constraints SCORE: 0.263 RANK: 6/6 DISTRICTS ASSESSED



9.7% Average unemployment (2019)	16.1% Under-employment (2019)	56.9 Economic dependency ratio	4.3% Population in lowest wealth quintile
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Gender Inequality SCORE: 0.461 RANK: 3/6 DISTRICTS ASSESSED



355.01 Domestic violence cases per 10k persons	0,048 Female economic opportunity score	6 Female economic opportunity rank	1.03 Female to male secondary school transition ratio	0.02 Female to male income ratio	0.23 Female to male labor force participation ratio	0.336 Female healthcare access score
4 Female healthcare access rank	10.3 Infant mortality rate (per 1,000 live births)	221.9 Maternal mortality rate (per 100k live births)	62.5 Adolescent birth rate (per 1,000 women)	22.0% Unmet need for contraception		



Population Pressures SCORE: 0.479 RANK: 4/6 DISTRICTS ASSESSED



3.36% Average annual population change	2.50% Average annual urban population change	9.20% Prevalence of stunting
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COPING CAPACITY (CC)

RANK: 1 / 6 DISTRICTS ASSESSED
SCORE: 0.602

Belize exhibits weaker Coping Capacity in the areas of Transportation Capacity and Governance. The bar charts indicate the socioeconomic themes contributing to the overall Coping Capacity score.



Economic Capacity SCORE: 0.833 RANK: 1/6 DISTRICTS ASSESSED



48.5%

Households owning homes

25.4%

Change in active tourism business

\$611.02

Average revenue per room (BZ\$)

\$1,495.96

Median monthly income (BZ\$)

72.45

Labor force participation rate

29.1%

Population in highest wealth quintile



Governance SCORE: 0.484 RANK: 4/6 DISTRICTS ASSESSED



81.7%

Voter participation

65.9%

Households with municipal garbage collection

53.43

Crime rate per 10k persons



Environmental Capacity SCORE: 0.560 RANK: 4/6 DISTRICTS ASSESSED



100.0%

Land area with low interannual water variability

19.1%

Percent protected land area



Infrastructure Capacity SCORE: 0.731 RANK: 2/6 DISTRICTS ASSESSED



Health Care Capacity SCORE: 0.549 RANK: 1/6 DISTRICTS ASSESSED

1.82

Health care centers per 10,000 persons

11.44

Physicians per 10,000 persons

25.19

Nurses per 10,000 persons

76.2%

Immunization coverage

14.31

Average distance to hospital (km)

12.59

Hospital beds per 10,000 persons



Transportation Capacity SCORE: 0.442 RANK: 4/6 DISTRICTS ASSESSED

0.4

Road density (km)

7.1

Average distance to port facility (km)



Communications Capacity SCORE: 1.000 RANK: 1/6 DISTRICTS ASSESSED

0.98

Average distance to cell tower (km)

30.6%

Households with fixed phone

86.8%

Households with mobile phone



Energy Capacity SCORE: 0.984 RANK: 1/6 DISTRICTS ASSESSED

97.3%

Households with electricity

91.5%

Households using gas for cooking



Emergency Services Capacity SCORE: 0.681 RANK: 2/6 DISTRICTS ASSESSED

741

Emergency shelter capacity per 10,000 persons

13.7

Average distance to warehouse (km)

2.1

Average distance to emergency shelter (km)

8.1

Average distance to fire station (km)

3.9

Average distance to police station (km)



RESILIENCE (R)

RANK: 1 / 6 DISTRICTS ASSESSED
SCORE: 0.591

Belize's score and ranking are due to Low Vulnerability combined with Extremely High Coping Capacity scores.

Below are the four thematic areas with the weakest relative scores:



Vulnerable Health Status



Environmental Stress



Transportation Capacity



Governance



HAZARD-SPECIFIC RISK (HSR)



Earthquake

RANK: 3 / 6 DISTRICTS ASSESSED
SCORE: 0.000



Extreme Heat

RANK: 4 / 6 DISTRICTS ASSESSED
SCORE: 0.054



Flood

RANK: 3 / 6 DISTRICTS ASSESSED
SCORE: 0.230



Landslide

RANK: 5 / 6 DISTRICTS ASSESSED
SCORE: 0.022



Storm Surge

RANK: 1 / 6 DISTRICTS ASSESSED
SCORE: 0.344



Tropical Cyclone Winds

RANK: 3 / 6 DISTRICTS ASSESSED
SCORE: 0.326



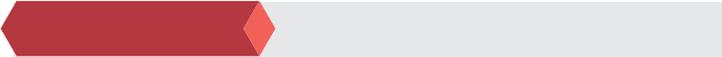
Wildfire

RANK: 6 / 6 DISTRICTS ASSESSED
SCORE: 0.002



MULTI-HAZARD RISK (MHR)

6 / 6
RANK WITHIN DISTRICTS
SCORE: 0.354



Belize's score and ranking are due to Low Multi-hazard Exposure combined with Low Vulnerability and Extremely High Coping Capacity scores.

Multi-hazard risk component scores compared to overall average country scores:

■ BELIZE SCORE ■ BELIZE SCORE
■ COUNTRY SCORE ■ COUNTRY SCORE



BELIZE RECOMMENDATIONS



Vulnerable Health Status

Belize ranks the second highest in the country for Vulnerable Health Status. Contributing to the high score is high Dengue Fever rates and high Tuberculosis rates. Public health campaigns can help address vaccinating against Dengue. In addition to vaccination campaigns for citizens, practice and develop mosquito mitigation plans. Mosquitos that carry Dengue can also carry chikungunya and zika. Standing water, inadequate sanitation, as well as inadequate and irregular garbage collection can all contribute to higher levels of mosquitos.

Belize is one of the countries reporting zero malaria cases since 2019 (PAHO/WHO, 2021). Lessons learned from this success could prove integral in the control of Dengue. Strengthen continuous capacity building for prompt and accurate testing, create programs for surveillance, case investigations and management, as well as conducting risk assessments to identify areas with a higher risk of transmission. In addition to mosquito mitigation, educate on the proper use of mosquito netting and prevention of mosquito bites through garments and repellants. Identify areas following hurricanes and storms that may collect water and develop a plan to remove the standing water at first opportunity.

In the case of Tuberculosis, immunization campaigns can be helpful, but so can improving environmental health conditions like indoor air quality during cooking, reducing overcrowded living circumstances and improving nutrition among the impoverished. Early diagnosis of tuberculosis, systematic screening and treatment, collaborative tuberculosis/HIV activities, and preventive treatment of persons at high risk are among the pillars of the World Health Organization's Global Tuberculosis Strategy to end Tuberculosis worldwide (WHO, 2014).

BELIZE RECOMMENDATIONS

2

Environmental Stress

Environmental stressors such as the depletion, degradation, or contamination of natural resources can exacerbate natural hazards and negatively impact the health, safety, and economic security of Belize's population. Although Belize district only ranks fourth in the country in environmental stress, high poverty rates, income inequality, clean water access vulnerability, and hazard exposures can be further exacerbated by environmental stressors. Unsustainable development contributes to increased risk of economic upheaval, force migration, and depletion of already limited resources. Promoting environmental health and mitigating sources of environmental stress will also help to safeguard against negative impacts to the tourism industry in Belize.

Environmental protection is vital to ensuring sustainable development within Belize. Continue to monitor and address sustainable development goals across all sectors (health, education, housing) to mitigate negative impacts associated with development. Identify areas where sustainable development and improvement may help mitigate mosquitos. Areas such as building window improvements, creation of proper outdoor drainage systems, and identifying areas that can hold standing water can all address both environmental stress and reducing vulnerable health status and the spread of disease.

BELIZE RECOMMENDATIONS

3

Transportation Capacity

Belize ranks 4th of 6 Districts in Transportation Capacity. Limited transportation capacity can hamper emergency response activities and decrease public access to vital resources such as adequate healthcare and food. Additionally, it can create further strain on citizens and the economy due to the need to travel greater distances for job opportunities, health care, and education. Reduce the distances to airports and ports from populated areas and identify new or improve emergency routes for densely populated areas. 100% of Belize district's population is exposed to hurricane winds, with 38% exposed to storm surge and 22% to other inland flooding, so it is important to maintain evacuation routes and supply chain pathways.

Identify areas with limited transportation opportunities to identify the best project areas where increasing transportation capacity has the highest impact. Ensure new transportation routes are developed within sustainable development guidelines with proper materials. Evaluate land, sea, and air transportation routes to ensure sufficient access during normal operations and times of disaster.

In the case of Tuberculosis, immunization campaigns can be helpful, but so can improving environmental health conditions like indoor air quality during cooking, reducing overcrowded living circumstances and improving nutrition among the impoverished. Early diagnosis of tuberculosis, systematic screening and treatment, collaborative tuberculosis/HIV activities, and preventive treatment of persons at high risk are among the pillars of the World Health Organization's Global Tuberculosis Strategy to end Tuberculosis worldwide (WHO, 2014).

BELIZE RECOMMENDATIONS

4

Governance

Belize ranks 4th of 6 districts in Governance. Contributing to the low score is the highest major crime rate per 10,000 persons. High crime rates break down neighborhoods, degrade social and community ties, and destabilize civil society. Belize also ranks 3rd of 6 for voter participation. Low voter participation can mean disillusionment, indifference with the government, or lack of faith in government functions. This can directly impact a person's choices to participate in criminal activities.

Address high crime rates through addressing the drivers of criminal activity in society. Create social programs to assist lower income populations in adequate shelters and needs. Additionally, increase community presence to reduce criminal activity through programs such as COMPSTAT. Work to build faith in the citizens through community outreach and education programs to increase civic participation.

**Better solutions.
Fewer disasters.**

Safer world.

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BELIZE

CAYO

NDPBA DISTRICTS PROFILE

BELIZE CAYO

CAPITAL: SAN IGNACIO

Area: 5,820 km²

The Cayo District is located in the Western region of Belize. This District is divided into 47 Cities, Towns and Villages: San Ignacio (The Capital), Belmopan, Benque Viejo del Carmen and Santa Elena and the main Cities and Towns. The District borders Guatemala to the west, Orange Walk to the north, Belize and Stann Creek to the east and Toledo to the south. The main economic sources for the country of Belize continues to be tourism, sugar, banana, citrus, marine products and crude oil.



RISK AND VULNERABILITY COMPONENT SCORE



MULTI-HAZARD RISK (MHR) - Very High
Score: 0.531 • Rank: 2/6



RESILIENCE (R) - High
Score: 0.515 • Rank: 3/6



MULTI-HAZARD EXPOSURE (MHE) - Extremely High
Score: 0.763 • Rank: 1/6



VULNERABILITY (V) - High
Score: 0.530 • Rank: 3/6



COPING CAPACITY (CC) - Very High
Score: 0.560 • Rank: 2/6



Population (2010 Census)
75,046



Population in lowest wealth quintile
21.1%



Population with no secondary school education
62.3%



Households with unimproved water access
6.87% households



Infant mortality rate (per 1,000 live births)
10.7

*For more information on data and components please visit: <https://bit.ly/2LqVoUO>



MULTI-HAZARD EXPOSURE (MHE)

RANK: 1 / 6 DISTRICTS
SCORE: 0.763



MHE
0.763

Raw MHE
1.000

Relative MHE
0.525

ESTIMATED POPULATION AND CAPITAL EXPOSED TO EACH HAZARD:



Earthquake

0.0%

0

-

Critical Infrastructure Exposed:
0.0%



Extreme Heat

88.2%

75,352

\$1.2 Billion

Critical Infrastructure Exposed:
84.4%



Flood

17.8%

15,200

\$2 Billion

Critical Infrastructure Exposed:
20.0%



Landslide

4.2%

3,602

\$43 Million

Critical Infrastructure Exposed:
0.5%



Storm Surge

0.0%

0

-

Critical Infrastructure Exposed:
0.0%



Tropical Cyclone Winds

100.0%

85,402

\$6.7 Billion

Critical Infrastructure Exposed:
100.0%



Wildfire

91.9%

78,447

\$6.6 Billion

Critical Infrastructure Exposed:
91.7%



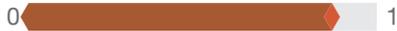
VULNERABILITY (V)

RANK: 3 / 6 DISTRICTS ASSESSED
SCORE: 0.530

Vulnerability in Cayo is primarily driven by Environmental Stress and Population Pressures. The bar charts indicate the socioeconomic themes contributing to the overall Vulnerability score.



Environmental Stress SCORE: 0.886 RANK: 2/6 DISTRICTS ASSESSED



19.8%

Tree cover loss

-7.3%

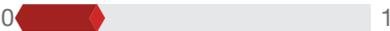
Projected changes in annual precipitation

37.4%

Decline in land productivity



Vulnerable Health Status SCORE: 0.217 RANK: 4/6 DISTRICTS ASSESSED



103.9

TB infections per 10k persons

155.84

Dengue incidence per 100k persons

536.36

Malaria incidence per 100k persons



Clean Water Vulnerability SCORE: 0.522 RANK: 4/6 DISTRICTS ASSESSED



6.87%

Households with unimproved water access

21.66%

Households with unimproved sanitation



Information Access Vulnerability SCORE: 0.481 RANK: 4/6 DISTRICTS ASSESSED



73.3%

Adult literacy

82.4

Primary to secondary school transition rate

19.9%

Working population with no secondary school education

19.9%

Households without radio access

22.0%

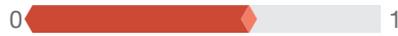
Households without television access

87.4%

Households without Internet access



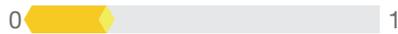
Economic Constraints SCORE: 0.632 RANK: 2/6 DISTRICTS ASSESSED



9.9% Average unemployment (2019)	27.9% Under-employment (2019)	72.2 Economic dependency ratio	21.1% Population in lowest wealth quintile
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Gender Inequality SCORE: 0.218 RANK: 6/6 DISTRICTS ASSESSED



89.28 Domestic violence cases per 10k persons	0,246 Female economic opportunity score	4 Female economic opportunity rank	1.02 Female to male secondary school transition ratio	0.14 Female to male income ratio	0.30 Female to male labor force participation ratio	0.335 Female healthcare access score
5 Female healthcare access rank	10.7 Infant mortality rate (per 1,000 live births)	149.6 Maternal mortality rate (per 100k live births)	62.0 Adolescent birth rate (per 1,000 women)	28.3% Unmet need for contraception		



Population Pressures SCORE: 0.752 RANK: 1/6 DISTRICTS ASSESSED



3.56% Average annual population change	4.64% Average annual urban population change	12.80% Prevalence of stunting
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COPING CAPACITY (CC)

RANK: 2 / 6 DISTRICTS ASSESSED
SCORE: 0.560

Cayo exhibits weaker Coping Capacity in the areas of Governance and Economic Capacity. The bar charts indicate the socioeconomic themes contributing to the overall Coping Capacity score.



Economic Capacity SCORE: 0.526 RANK: 3/6 DISTRICTS ASSESSED



65.3%

Households owning homes

15.1%

Change in active tourism business

\$458.68

Average revenue per room (BZ\$)

\$1,242.97

Median monthly income (BZ\$)

64.08

Labor force participation rate

15.2%

Population in highest wealth quintile



Governance SCORE: 0.490 RANK: 3/6 DISTRICTS ASSESSED



79.7%

Voter participation

52.5%

Households with municipal garbage collection

31.38

Crime rate per 10k persons



Environmental Capacity SCORE: 1.000 RANK: 1/6 DISTRICTS ASSESSED



99.99%

Land area with low interannual water variability

55.2%

Percent protected land area



Infrastructure Capacity SCORE: 0.744 RANK: 1/6 DISTRICTS ASSESSED



Health Care Capacity SCORE: 0.375 RANK: 5/6 DISTRICTS ASSESSED

1.56

Health care centers per 10,000 persons

4.80

Physicians per 10,000 persons

10.39

Nurses per 10,000 persons

85.3%

Immunization coverage

7.80

Average distance to hospital (km)

8.26

Hospital beds per 10,000 persons



Transportation Capacity SCORE: 0.961 RANK: 1/6 DISTRICTS ASSESSED

0.7

Road density (km)

6.1

Average distance to port facility (km)



Communications Capacity SCORE: 0.719 RANK: 2/6 DISTRICTS ASSESSED

1.83

Average distance to cell tower (km)

17.8%

Households with fixed phone

84.5%

Households with mobile phone



Energy Capacity SCORE: 0.887 RANK: 2/6 DISTRICTS ASSESSED

91.3%

Households with electricity

92.6%

Households using gas for cooking



Emergency Services Capacity SCORE: 0.777 RANK: 1/6 DISTRICTS ASSESSED

1,270

Emergency shelter capacity per 10,000 persons

21.3

Average distance to warehouse (km)

1.6

Average distance to emergency shelter (km)

5.5

Average distance to fire station (km)

4.0

Average distance to police station (km)



RESILIENCE (R)

RANK: 3 / 6 DISTRICTS ASSESSED
SCORE: 0.515

Cayo's score and ranking are due to High Vulnerability combined with Very High Coping Capacity scores.

Below are the four thematic areas with the weakest relative scores:



Environmental Stress



Population Pressures



Governance



Economic Capacity



HAZARD-SPECIFIC RISK (HSR)



Earthquake

RANK: 3 / 6 DISTRICTS ASSESSED
SCORE: 0.000



Extreme Heat

RANK: 2 / 6 DISTRICTS ASSESSED
SCORE: 0.479



Flood

RANK: 2 / 6 DISTRICTS ASSESSED
SCORE: 0.247



Landslide

RANK: 3 / 6 DISTRICTS ASSESSED
SCORE: 0.264



Storm Surge

RANK: 5 / 6 DISTRICTS ASSESSED
SCORE: 0.000



Tropical Cyclone Winds

RANK: 1 / 6 DISTRICTS ASSESSED
SCORE: 0.460



Wildfire

RANK: 1 / 6 DISTRICTS ASSESSED
SCORE: 0.472



MULTI-HAZARD RISK (MHR)

2 / 6
RANK WITHIN DISTRICTS
SCORE: 0.531



Cayo's score and ranking are due to Extremely High Multi-hazard Exposure combined with High Vulnerability and Very High Coping Capacity scores.

Multi-hazard risk component scores compared to overall average country scores: ■ ■ CAYO SCORE ■ COUNTRY SCORE



CAYO RECOMMENDATIONS



Environmental Stress

Belize ranks 2nd highest of the six districts for environmental stress. Driving this trend is the highest rates of tree cover loss in the country from 2000-2020 and the second highest values in percent of land area with declining productivity. Changing climate will be exacerbating these stresses and making agricultural lands more susceptible to temperature and precipitation extremes. Adopting Climate Smart Agricultural Practices (CSAs) and technologies can help reduce the need for further land clearing as well as maintaining or improving efficiencies in agricultural work (CIAT,2018). Crop rotations and changing plant density can be low cost ways to improve soil conditions and prevent erosion (CIAT,2018). Government incentives for sustainable farming, including more equitable access to credit and purchasing options can allow for environmental conservation efforts when land productivity needs long term maintenance.

Cayo also has the highest percentage of protected land of all the districts and has very low levels of interannual water variability. Capitalizing on the stability of its reserves and protected areas and long term agricultural planning can help to lessen the burden of climate change. Environmental protection is vital to ensuring sustainable development within Cayo.

CAYO RECOMMENDATIONS

2

Population Pressures

Cayo ranks the highest in population pressures of the six districts in Belize. Contributing to the high score is high amounts of annual population change and urban population change in the district. High rates of migration into or out of urban centers can strain government services, making planning difficult for disasters. Sharp rises in population growth can exacerbate poverty and lead to the degradation of the environment (Ministry of Natural Resources and Agriculture, 2012). Slowing population growth can alleviate stress on the environment and build on sustainable development goals (Ministry of Natural Resources and Agriculture, 2012).

While it may be difficult to reduce the physical numbers of people moving in and out of the area, recognizing and planning for the strain that this puts onto services, infrastructure and natural resources will be important, especially during disasters. 91% of Cayo's population is exposed to wildfire hazards and 88% to extreme heat hazards. Both hazards will likely increase in likelihood with the changing climate. Disaster management planning and investment for sufficient shelters, emergency services and routes, as well as other critical infrastructure like hospitals and schools will help to alleviate these pressures on society and the natural environment.

CAYO RECOMMENDATIONS

3

Governance

Cayo ranks 3rd of 6 districts in Governance. Contributing to the score is lower rates of voter participation. This can mean disillusionment, indifference with the government, or lack of faith in government functions. Cayo additionally has the highest rates of unemployment as well as the second highest economic dependency ratio. Lack of confidence in economic and social programs due to economic hardship can lead to other social issues like rising crime, poverty, and declining education.

Work to build faith in the citizens through community outreach and education programs to increase civic participation. Develop social programs that create community in the predominant economies like agriculture and tourism.

CAYO RECOMMENDATIONS

4

Economic Capacity

Cayo scores third in economic capacity. Cayo shows the second lowest increase in tourism businesses in the country while maintaining a higher than average rate per accommodation room than other districts. It also has the third lowest labor force participation rate. Low economic capacity can exacerbate access to adequate health care, food stability, proper nutrition, and strain the environment and social services.

Cayo has only 15% of its population in the highest wealth quintile, meaning that the majority of its population is economically vulnerable. Evaluate disaster response and recovery plans to ensure the inclusion of these populations in long- and short-term recovery processes. Additionally, 30% of Cayo's capital stock is exposed to floods, and nearly 100% is exposed to wildfire and hurricane force winds.

Review and incentivize short term economic activities that could help to maintain economic viability, food security and nutrition requirements in the event of natural disasters. Analyze if nutritional needs are being met and that in the case of disaster nutritional requirements are planned for. Create public policies guaranteeing equal opportunity and fair wages for all. Assess feasibility of government programs to assist in job creation and economic growth through education and short-term assistance designed to promote self-sustaining economic opportunities and decrease long-term reliance on government programs.

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Fewer disasters.**

Safer world.

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BELIZE

COROZAL

NDPBA DISTRICTS PROFILE

BELIZE COROZAL

CAPITAL: COROZAL TOWN

Area: 2,235 km²

The Corozal District is located in the Northern region of Belize. This District is divided into 31 Cities, Towns and Villages: Corozal Town (The Capital), is the main city. The District borders Mexico to the Northwest, Orange walk to the southwest, Belize to the south, and the Atlantic Ocean to the east. The main economic sources for the country of Belize continues to be tourism, sugar, banana, citrus, marine products and crude oil.



RISK AND VULNERABILITY COMPONENT SCORE



MULTI-HAZARD RISK (MHR) - Low
Score: 0.437 • Rank: 5/6



RESILIENCE (R) - Low
Score: 0.466 • Rank: 5/6



MULTI-HAZARD EXPOSURE (MHE) - Very Low
Score: 0.068 • Rank: 6/6



VULNERABILITY (V) - Very High
Score: 0.553 • Rank: 2/6



COPING CAPACITY (CC) - High
Score: 0.485 • Rank: 3/6



Population (2010 Census)
41,061



Population in lowest wealth quintile
18.4%



Population with no secondary school education
67.8%



Households with unimproved water access
6.36% households



Infant mortality rate (per 1,000 live births)
17.8

*For more information on data and components please visit: <https://bit.ly/2LqVoUO>



MULTI-HAZARD EXPOSURE (MHE)

RANK: 6 / 6 DISTRICTS
SCORE: 0.068



ESTIMATED POPULATION AND CAPITAL EXPOSED TO EACH HAZARD:



Earthquake

0.0%

0

-
Critical Infrastructure Exposed:
0.0%



Extreme Heat

0.0%

0

-
Critical Infrastructure Exposed:
0.0%



Flood

14.6%

7,094

\$112.7 Million

Critical Infrastructure Exposed:
10.9%



Landslide

0.0%

0

-
Critical Infrastructure Exposed:
0.0%



Storm Surge

4.3%

2,060

\$76.2 Million

Critical Infrastructure Exposed:
3.9%



Tropical Cyclone Winds

100.0%

48,467

\$848.4 Million

Critical Infrastructure Exposed:
100.0%



Wildfire

80.5%

39,027

\$804.2 Million

Critical Infrastructure Exposed:
76.6%



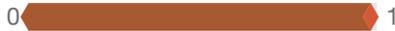
VULNERABILITY (V)

RANK: 2 / 6 DISTRICTS ASSESSED
SCORE: 0.553

Vulnerability in Corozal is primarily driven by Environmental Stress and Clean Water Access Vulnerability. The bar charts indicate the socioeconomic themes contributing to the overall Vulnerability score.



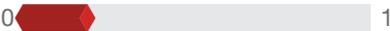
Environmental Stress SCORE: 1.000 RANK: 1/6 DISTRICTS ASSESSED



21.8% Tree cover loss	-6.9% Projected changes in annual precipitation	- Decline in land productivity
---------------------------------	---	--



Vulnerable Health Status SCORE: 0.189 RANK: 5/6 DISTRICTS ASSESSED



127.72 TB infections per 10k persons	494.57 Dengue incidence per 100k persons	84.24 Malaria incidence per 100k persons
--	--	--



Clean Water Vulnerability SCORE: 0.63 RANK: 3/6 DISTRICTS ASSESSED



6.36% Households with unimproved water access	34.06% Households with unimproved sanitation
---	--



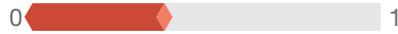
Information Access Vulnerability SCORE: 0.616 RANK: 3/6 DISTRICTS ASSESSED



75.7% Adult literacy	70.0 Primary to secondary school transition rate	23.2% Working population with no secondary school education	23.2% Households without radio access	15.7% Households without television access	90.6% Households without Internet access
--------------------------------	--	---	---	--	--



Economic Constraints SCORE: 0.385 RANK: 5/6 DISTRICTS ASSESSED



7.7% Average unemployment (2019)	24.9% Under-employment (2019)	63.6 Economic dependency ratio	18.4% Population in lowest wealth quintile
--	---	--	--



Gender Inequality SCORE: 0.596 RANK: 1/6 DISTRICTS ASSESSED



316.85 Domestic violence cases per 10k persons	0,489 Female economic opportunity score	3 Female economic opportunity rank	1.06 Female to male secondary school transition ratio	0.16 Female to male income ratio	0.39 Female to male labor force participation ratio	0.434 Female healthcare access score
3 Female healthcare access rank	17.8 Infant mortality rate (per 1,000 live births)	122.1 Maternal mortality rate (per 100k live births)	104.0 Adolescent birth rate (per 1,000 women)	11.7% Unmet need for contraception		



Population Pressures SCORE: 0.459 RANK: 5/6 DISTRICTS ASSESSED



2.27% Average annual population change	2.83% Average annual urban population change	15.80% Prevalence of stunting
--	--	---



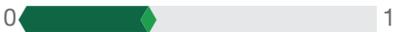
COPING CAPACITY (CC)

RANK: 3 / 6 DISTRICTS ASSESSED
SCORE: 0.485

Corozal exhibits weaker Coping Capacity in the areas of Emergency Service Capacity and Economic Capacity. The bar charts indicate the socioeconomic themes contributing to the overall Coping Capacity score.



Economic Capacity SCORE: 0.356 RANK: 5/6 DISTRICTS ASSESSED



77.3%

Households owning homes

3.8%

Change in active tourism business

\$73.88

Average revenue per room (BZ\$)

\$854.83

Median monthly income (BZ\$)

65.86

Labor force participation rate

20.3%

Population in highest wealth quintile



Governance SCORE: 0.629 RANK: 1/6 DISTRICTS ASSESSED



86.5%

Voter participation

28.4%

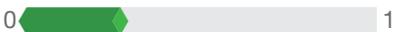
Households with municipal garbage collection

23.86

Crime rate per 10k persons



Environmental Capacity SCORE: 0.274 RANK: 6/6 DISTRICTS ASSESSED



76.2%

Land area with low interannual water variability

14.3%

Percent protected land area



Infrastructure Capacity SCORE: 0.592 RANK: 4/6 DISTRICTS ASSESSED



Health Care Capacity SCORE: 0.430 RANK: 4/6 DISTRICTS ASSESSED

4.13

Health care centers per 10,000 persons

8.04

Physicians per 10,000 persons

4.14

Nurses per 10,000 persons

86.1%

Immunization coverage

12.96

Average distance to hospital (km)

8.52

Hospital beds per 10,000 persons



Transportation Capacity SCORE: 0.864 RANK: 2/6 DISTRICTS ASSESSED

0.7

Road density (km)

6.8

Average distance to port facility (km)



Communications Capacity SCORE: 0.644 RANK: 4/6 DISTRICTS ASSESSED

1.96

Average distance to cell tower (km)

19.0%

Households with fixed phone

76.7%

Households with mobile phone



Energy Capacity SCORE: 0.714 RANK: 5/6 DISTRICTS ASSESSED

93.5%

Households with electricity

78.0%

Households using gas for cooking



Emergency Services Capacity SCORE: 0.306 RANK: 5/6 DISTRICTS ASSESSED

1,311

Emergency shelter capacity per 10,000 persons

36.1

Average distance to warehouse (km)

2.1

Average distance to emergency shelter (km)

13.8

Average distance to fire station (km)

10.2

Average distance to police station (km)



RESILIENCE (R)

RANK: 5 / 6 DISTRICTS ASSESSED
SCORE: 0.466

Corozal's score and ranking are due to Very High Vulnerability combined with High Coping Capacity scores.

Below are the four thematic areas with the weakest relative scores:



Environmental Stress



Clean Water Access Vulnerability



Emergency Service Capacity



Economic Capacity



HAZARD-SPECIFIC RISK (HSR)



Earthquake

RANK: 3 / 6 DISTRICTS ASSESSED
SCORE: 0.000



Extreme Heat

RANK: 5 / 6 DISTRICTS ASSESSED
SCORE: 0.000



Flood

RANK: 6 / 6 DISTRICTS ASSESSED
SCORE: 0.004



Landslide

RANK: 6 / 6 DISTRICTS ASSESSED
SCORE: 0.000



Storm Surge

RANK: 3 / 6 DISTRICTS ASSESSED
SCORE: 0.249



Tropical Cyclone Winds

RANK: 4 / 6 DISTRICTS ASSESSED
SCORE: 0.303



Wildfire

RANK: 4 / 6 DISTRICTS ASSESSED
SCORE: 0.318



MULTI-HAZARD RISK (MHR)

5 / 6
RANK WITHIN DISTRICTS
SCORE: 0.437



Corozal's score and ranking are due to Very Low Multi-hazard Exposure combined with Very High Vulnerability and High Coping Capacity scores.

Multi-hazard risk component scores compared to overall average country scores: █ █ **COROZAL SCORE** █ **COUNTRY SCORE**



COROZAL RECOMMENDATIONS



Environmental Stress

Corozal ranks the highest in Belize in environmental stress. According to data from the Global Forest Watch, this district has lost nearly 22% of its tree cover since the year 2000 and has the lowest acreage in protected areas of any district. High poverty rates, income inequality, food insecurity, and clean water access vulnerability can be further exacerbated by environmental stressors. Unsustainable development contributes to an increased risk of economic upheaval, force unsustainable migration patterns, and deplete already limited resources.

Environmental protection is vital to ensuring sustainable development within Belize. Developing and following sustainable development goals can address and mitigate factors that may be exacerbated during development phases. Improving land tenure legislation to remove “development” requirements on leased lands can allow for alternative land uses of natural areas (Ministry Agriculture et al., 2020). Promoting environmental health and mitigating sources of environmental stress will also help to safeguard against negative impacts to the growing tourism industry in Corozal. Additionally, expanding and diversifying protected areas can promote the sustainable use and protection of unique resources in the district, in addition to acting as a natural buffer against hazard impacts.

COROZAL RECOMMENDATIONS

2

Clean Water Access Vulnerability

Corozal ranks third in Belize for Clean Water Access Vulnerability with 34% of households lacking access to improved sanitation. Lack of access to improved sanitation is a leading risk factor for infectious diseases such as cholera, dysentery, typhoid, and polio. Lack of reliable sanitation also increases the spread of mosquitos contributing to incidents of chikungunya, zika, and dengue. Those without easy or adequate access to water distribution and containment systems face significant demands on daily routines that effectively limit their response and recovery capacity and the ability to maintain livelihoods.

Increasing access to improved water and sanitation in Corozal improves health outcomes and frees up resources to decrease further susceptibility to impacts, as growing populations and climate change will only exacerbate existing vulnerabilities.

COROZAL RECOMMENDATIONS

3

Emergency Service Capacity

Corozal has the 2nd lowest Emergency Services Capacity when compared to the other 5 districts in Belize. The entire district only has one mapped fire station and two mapped police stations. Decreasing the distance between populations and emergency services infrastructure will help to manage emergencies that scale from day-to-day events up to catastrophes that impact all of society. Corozal has a higher travel distance to warehouses and shelters. This could be due in part to the number of approved shelter locations which were not able to be mapped. However, a review of the locations and capacities of emergency shelters in the district can help save lives and make shelter more accessible to vulnerable populations. Ensure that new shelters can withstand wind and flood impacts annually prior to the start of the Atlantic Hurricane Season.

There are no emergency storage warehouses located within the district so emergency supplies travel on average 36 miles from Orange Walk to populated places in Corozal. Designating existing structures located within Corozal or investing in new purpose-built warehouse locations in the district will strengthen emergency services capacity. Update existing disaster management and logistics plans to ensure that adequate resources and equipment are available to support mass care of affected populations during a disaster.

COROZAL RECOMMENDATIONS

4

Economic Capacity

A strong economic foundation provides an indication of a district's ability to absorb economic losses and quickly mobilize financial assets for preparedness, response, and recovery activities. Corozal's limited economic capacity correlates to disproportionate disaster impacts. Corozal ranks second lowest in overall economic capacity in Belize. Contributing to this low ranking is the lowest median monthly income in Belize, more than \$300 Belizean less per month than the average of other districts. Additionally, low ratios of women to men in the workforce and high levels of underemployment may point to an uneven economy. Low economic capacity can exacerbate access to adequate health care, food stability, proper nutrition, and strain the environment and social services.

While the tourism industry in Corozal is still developing, the district has the highest rate of home ownership in the country, and the second lowest unemployment rate. Expanding public policies guaranteeing equal opportunity and fair wages for all could rapidly improve the district's economic capacity. Assess the feasibility of government programs to assist in job creation and economic growth through education and short-term assistance designed to promote self-sustaining economic opportunities and decrease long-term reliance on government programs.

Evaluate disaster response and recovery plans to ensure the inclusion of economically vulnerable populations in long- and short-term recovery processes. Review food security and nutrition requirements for a population and analyze if nutritional needs are being met and that in the case of disaster, nutritional requirements are planned for.

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Safer world.

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BELIZE

ORANGE WALK

NDPBA DISTRICTS PROFILE

BELIZE ORANGE WALK

CAPITAL: ORANGE WALK TOWN

Area: 5,106 km²

The Orange Walk District is located in the Northwest region of Belize. This District is divided into 37 Cities, Towns and Villages: Orange Walk Town (The Capital), is the main city. The District borders Mexico to the north, Guatemala to the west, Cayo to the south, Belize to the east and Corozal to the northeast. The main economic sources for the country of Belize continues to be tourism, sugar, banana, citrus, marine products and crude oil.



RISK AND VULNERABILITY COMPONENT SCORE



MULTI-HAZARD RISK (MHR) - Moderate
Score: 0.449 • Rank: 4/6



RESILIENCE (R) - Moderate
Score: 0.500 • Rank: 4/6



MULTI-HAZARD EXPOSURE (MHE) - Moderate
Score: 0.218 • Rank: 4/6



VULNERABILITY (V) - Moderate
Score: 0.473 • Rank: 4/6



COPING CAPACITY (CC) - Moderate
Score: 0.474 • Rank: 4/6



Population (2010 Census)
45,946



Population in lowest wealth quintile
15.4%



Population with no secondary school education
76.2%



Households with unimproved water access
10.42% households



Infant mortality rate (per 1,000 live births)
7.9

*For more information on data and components please visit: <https://bit.ly/2LqVoUO>



MULTI-HAZARD EXPOSURE (MHE)

RANK: 4 / 6 DISTRICTS
SCORE: 0.218



ESTIMATED POPULATION AND CAPITAL EXPOSED TO EACH HAZARD:



Earthquake

0.0%

0

-

Critical Infrastructure Exposed:
0.0%



Extreme Heat

35.4%

14,737

\$138.1 Million

Critical Infrastructure Exposed:
18.8%



Flood

16.0%

6,671

\$240.6 Million

Critical Infrastructure Exposed:
11.1%



Landslide

1.4%

571

\$20.4 Million

Critical Infrastructure Exposed:
1.7%



Storm Surge

0.0%

0

-

Critical Infrastructure Exposed:
0.0%



Tropical Cyclone Winds

100.0%

41,656

\$1.7 Billion

Critical Infrastructure Exposed:
100.0%



Wildfire

97.2%

40,470

\$1.7 Billion

Critical Infrastructure Exposed:
99.2%



VULNERABILITY (V)

RANK: 4 / 6 DISTRICTS ASSESSED
SCORE: 0.473

Vulnerability in Orange Walk is primarily driven by Information Access Vulnerability and Clean Water Access Vulnerability. The bar charts indicate the socioeconomic themes contributing to the overall Vulnerability score.



Environmental Stress SCORE: 0.712 RANK: 3/6 DISTRICTS ASSESSED



17.3%

Tree cover loss

-8.0%

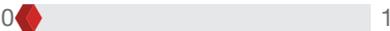
Projected changes in annual precipitation

37.9%

Decline in land productivity



Vulnerable Health Status SCORE: 0.033 RANK: 6/6 DISTRICTS ASSESSED



62.11

TB infections per 10k persons

64.18

Dengue incidence per 100k persons

89.03

Malaria incidence per 100k persons



Clean Water Vulnerability SCORE: 0.751 RANK: 2/6 DISTRICTS ASSESSED



10.42%

Households with unimproved water access

26.04%

Households with unimproved sanitation



Information Access Vulnerability SCORE: 0.826 RANK: 2/6 DISTRICTS ASSESSED



72.6%

Adult literacy

65.7

Primary to secondary school transition rate

27.3%

Working population with no secondary school education

27.3%

Households without radio access

22.7%

Households without television access

91.6%

Households without Internet access



Economic Constraints SCORE: 0.473 RANK: 3/6 DISTRICTS ASSESSED



9.4% Average unemployment (2019)	24.6% Under-employment (2019)	64.1 Economic dependency ratio	15.4% Population in lowest wealth quintile
--	---	--	--



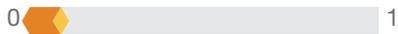
Gender Inequality SCORE: 0.429 RANK: 4/6 DISTRICTS ASSESSED



155.40 Domestic violence cases per 10k persons	0,900 Female economic opportunity score	1 Female economic opportunity rank	1.33 Female to male secondary school transition ratio	0.20 Female to male income ratio	0.52 Female to male labor force participation ratio	0.084 Female healthcare access score
6 Female healthcare access rank	7.9 Infant mortality rate (per 1,000 live births)	97.7 Maternal mortality rate (per 100k live births)	67.0 Adolescent birth rate (per 1,000 women)	15.9% Unmet need for contraception		



Population Pressures SCORE: 0.090 RANK: 6/6 DISTRICTS ASSESSED



1.60% Average annual population change	-0.03% Average annual urban population change	13.00% Prevalence of stunting
--	---	---



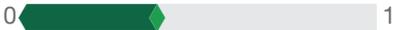
COPING CAPACITY (CC)

RANK: 4 / 6 DISTRICTS ASSESSED
SCORE: 0.474

Orange Walk exhibits weaker Coping Capacity in the areas of Emergency Service Capacity and Transportation Capacity. The bar charts indicate the socioeconomic themes contributing to the overall Coping Capacity score.



Economic Capacity SCORE: 0.381 RANK: 4/6 DISTRICTS ASSESSED



61.2%

Households owning homes

18.4%

Change in active tourism business

\$213.87

Average revenue per room (BZ\$)

\$1,016.05

Median monthly income (BZ\$)

59.92

Labor force participation rate

21.1%

Population in highest wealth quintile



Governance SCORE: 0.551 RANK: 2/6 DISTRICTS ASSESSED



85.6%

Voter participation

33.0%

Households with municipal garbage collection

33.11

Crime rate per 10k persons



Environmental Capacity SCORE: 0.418 RANK: 5/6 DISTRICTS ASSESSED



47.3%

Land area with low interannual water variability

48.4%

Percent protected land area



Infrastructure Capacity SCORE: 0.492 RANK: 5/6 DISTRICTS ASSESSED



Health Care Capacity SCORE: 0.455 RANK: 2/6 DISTRICTS ASSESSED

5.80

Health care centers per 10,000 persons

6.09

Physicians per 10,000 persons

13.06

Nurses per 10,000 persons

82.5%

Immunization coverage

19.05

Average distance to hospital (km)

12.41

Hospital beds per 10,000 persons



Transportation Capacity SCORE: 0.309 RANK: 5/6 DISTRICTS ASSESSED

0.4

Road density (km)

9.8

Average distance to port facility (km)



Communications Capacity SCORE: 0.618 RANK: 5/6 DISTRICTS ASSESSED

2.49 Average distance to cell tower (km)	20.7% Households with fixed phone	75.7% Households with mobile phone
--	---	--



Energy Capacity SCORE: 0.810 RANK: 3/6 DISTRICTS ASSESSED

93.2% Households with electricity	84.9% Households using gas for cooking
---	--



Emergency Services Capacity SCORE: 0.266 RANK: 6/6 DISTRICTS ASSESSED

1,507 Emergency shelter capacity per 10,000 persons	18.8 Average distance to warehouse (km)	3.5 Average distance to emergency shelter (km)	18.8 Average distance to fire station (km)	11.3 Average distance to police station (km)
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RESILIENCE (R)

RANK: 4 / 6 DISTRICTS ASSESSED
SCORE: 0.500

Orange Walk's score and ranking are due to Moderate Vulnerability combined with Moderate Coping Capacity scores.

Below are the four thematic areas with the weakest relative scores:



Information
Access
Vulnerability



Clean Water Access
Vulnerability



Emergency Service
Capacity



Transportation
Capacity



HAZARD-SPECIFIC RISK (HSR)



Earthquake

RANK: 3 / 6 DISTRICTS ASSESSED
SCORE: 0.000



Extreme Heat

RANK: 3 / 6 DISTRICTS ASSESSED
SCORE: 0.164



Flood

RANK: 5 / 6 DISTRICTS ASSESSED
SCORE: 0.020



Landslide

RANK: 4 / 6 DISTRICTS ASSESSED
SCORE: 0.178



Storm Surge

RANK: 5 / 6 DISTRICTS ASSESSED
SCORE: 0.000



Tropical Cyclone Winds

RANK: 5 / 6 DISTRICTS ASSESSED
SCORE: 0.295



Wildfire

RANK: 2 / 6 DISTRICTS ASSESSED
SCORE: 0.376



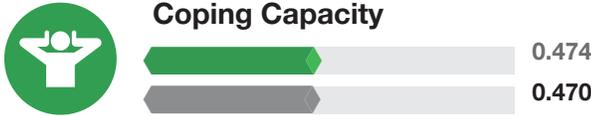
MULTI-HAZARD RISK (MHR)

4 / 6
RANK WITHIN DISTRICTS
SCORE: 0.449



Orange Walk's score and ranking are due to Moderate Multi-hazard Exposure combined with Moderate Vulnerability and Moderate Coping Capacity scores.

Multi-hazard risk component scores compared to overall average country scores: ■ ■ ORANGE WALK SCORE ■ COUNTRY SCORE



ORANGE WALK RECOMMENDATIONS



Information Access Vulnerability

Limitations in information access can impede a population's ability to receive, understand, and take action. Emergency messages must take into account the unique information access constraints of the district. Emergency messages presented to the population of Orange Walk must contain clear and simple information to ensure an appropriate response to save lives and reduce losses. Orange Walk ranks the second highest in Belize for Information Access Vulnerability. 92% of homes in Orange Walk do not have internet leaving many to rely on broadband radio and television to receive their information. Orange Walk also show the second largest average distance to a cell phone tower from populated places. Lack of access to information hinders the ability of government agencies to share critical information during disasters.

Increase network infrastructure to increase coverage, accessibility, and reliability of communications for day-to-day use and especially during disasters. Encourage telecommunication infrastructure development at a sustainable pace and alongside more environmentally friendly technology.

Lack of access to information can also be dependent on access to education, healthcare, and other needs. Orange Walk ranks second lowest in adult literacy as well as the working population with no secondary school. It also ranks the lowest for the transition from primary to secondary school. Investing in the continuity and quality of education for the district population will improve the access to and understanding of important emergency messages and empower communities with the knowledge to make better decisions during a disaster.

ORANGE WALK RECOMMENDATIONS

2

Clean Water Access Vulnerability

Those without easy or adequate access to water distribution and containment systems face significant demands on daily routines that effectively limit their response and recovery capacity and the ability to maintain livelihoods. Increasing access to improved water and sanitation in Orange Walk improves health outcomes and frees up resources to decrease further susceptibility to impacts.

Corozal ranks second in Belize for Clean Water Access Vulnerability with over ten percent of households lacking access to improved drinking water, the highest in Belize. Lack of access to improved drinking water is linked to the transmission of diseases such as cholera and chronic diseases caused by inadequate drinking water strain medical resources.

Invest in the expansion of piped water and sewer systems to underserved areas, as growing population and climate change will only exacerbate existing vulnerabilities. Ensure that all clean drinking water is easily accessed for all households within a certain distance. Ensure clean drinking water plans are made for disasters.

ORANGE WALK RECOMMENDATIONS

3

Emergency Service Capacity

Orange Walk has the lowest Emergency Services Capacity when compared to the other five districts in Belize and nearly 100% of its critical infrastructure locations are exposed to Wildfire. However, it is an average of over 18 kilometers from any populated area in Orange Walk to the only fire station in the district and over 3.5 kilometers to an emergency shelter, the furthest in the country. Wildfire impacts over 99% of critical infrastructure in the district, making it difficult for first responders to respond or for citizens to travel to safety. Orange Walk has higher-than-average distances to most of its emergency services.

Strengthen emergency service capacity by reducing distance traveled to reach shelters, warehouses and other emergency infrastructure. Expand shelter capacity by designating existing structures located in Orange Walk or investing in new purpose-built shelter locations. Ensure that new shelters can withstand wind or flood impacts annually prior to the start of the Atlantic Hurricane Season. Locate new shelters away from fire-prone areas and use fire safe landscaping and defensible space techniques to protect critical infrastructure. Update existing disaster management and logistics plans to ensure that adequate resources and equipment are available to support mass care of affected populations during a disaster.

Lack of access to information can also be dependent on access to education, healthcare, and other needs. Orange Walk ranks second lowest in adult literacy as well as the working population with no secondary school. It also ranks the lowest for the transition from primary to secondary school. Investing in the continuity and quality of education for the district population will improve the access to and understanding of important emergency messages and empower communities with the knowledge to make better decisions during a disaster.

ORANGE WALK RECOMMENDATIONS

4

Transportation Capacity

Denser and more diverse transportation networks provide more options for bringing outside resources into an impacted area and increase the ability of response stakeholders to access provincial populations. Improved transportation capacity supports all aspects of Orange Walk's ability to distribute resources before, during, and after a disaster. Orange Walk ranks the second lowest in Transportation Capacity. This is reflected in high distances to ports and airports and a low density of roads per area.

Orange Walk is a large district with many uninhabited areas where roads are scarce, and some infrastructure repairs have been underway since Hurricanes Eta and Iota. However additional investments in the quality and maintenance of existing transportation infrastructure as well as the creation of new roadways will not only alleviate supply chain issues during an emergency but can also improve economic opportunity, tourism and every day goods and services distribution for residents.

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BELIZE

STANN CREEK

NDPBA DISTRICTS PROFILE

BELIZE STANN CREEK

CAPITAL: DANGRIGA

Area: 2,550 km²

The Stann Creek District is located in the Eastern region of Belize. This District is divided into 30 Cities, Towns and Villages: Dangriga (The Capital), is the main city. The District borders Belize to the north, Cayo to the west, Toledo to the south and the Atlantic Ocean to the east. The main economic sources for the country of Belize continues to be tourism, sugar, banana, citrus, marine products and crude oil.



RISK AND VULNERABILITY COMPONENT SCORE



MULTI-HAZARD RISK (MHR) - High
Score: 0.459 • Rank: 3/6



RESILIENCE (R) - Very High
Score: 0.528 • Rank: 2/6



MULTI-HAZARD EXPOSURE (MHE) - High
Score: 0.276 • Rank: 3/6



VULNERABILITY (V) - Very Low
Score: 0.341 • Rank: 6/6



COPING CAPACITY (CC) - Low
Score: 0.397 • Rank: 5/6



Population (2010 Census)
34,324



Population in lowest wealth quintile
26.3%



Population with no secondary school education
62.4%



Households with unimproved water access
0.65% households



Infant mortality rate (per 1,000 live births)
10.6

*For more information on data and components please visit: <https://bit.ly/2LqVoUO>



MULTI-HAZARD EXPOSURE (MHE)

RANK: 3 / 6 DISTRICTS
SCORE: 0.276



ESTIMATED POPULATION AND CAPITAL EXPOSED TO EACH HAZARD:



Earthquake
41.2%
 16,969
 \$409.5 Million
 Critical Infrastructure Exposed:
 44.6%



Extreme Heat
0.0%
 0
 -
 Critical Infrastructure Exposed:
 0.0%



Flood
30.4%
 12,533
 \$359.6 Million
 Critical Infrastructure Exposed:
 28.2%



Landslide
5.7%
 2,339
 \$6.5 Million
 Critical Infrastructure Exposed:
 10.9%



Storm Surge
27.1%
 11,175
 \$33.9 Million
 Critical Infrastructure Exposed:
 22.7%



Tropical Cyclone Winds
100.0%
 41,219
 \$1.4 Billion
 Critical Infrastructure Exposed:
 100.0%



Wildfire
53.3%
 21,954
 \$1.2 Billion
 Critical Infrastructure Exposed:
 54.6%



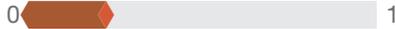
VULNERABILITY (V)

RANK: 6 / 6 DISTRICTS ASSESSED
SCORE: 0.341

Vulnerability in Stann Creek is primarily driven by Population Pressures and Economic Constraints. The bar charts indicate the socioeconomic themes contributing to the overall Vulnerability score.



Environmental Stress SCORE: 0.226 RANK: 6/6 DISTRICTS ASSESSED



7.7% Tree cover loss	-7.4% Projected changes in annual precipitation	23.3% Decline in land productivity
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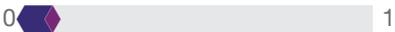
Vulnerable Health Status SCORE: 0.426 RANK: 3/6 DISTRICTS ASSESSED



174.17 TB infections per 10k persons	93.09 Dengue incidence per 100k persons	2957.96 Malaria incidence per 100k persons
--	---	--



Clean Water Vulnerability SCORE: 0.081 RANK: 6/6 DISTRICTS ASSESSED



0.65% Households with unimproved water access	10.33% Households with unimproved sanitation
---	--



Information Access Vulnerability SCORE: 0.437 RANK: 5/6 DISTRICTS ASSESSED



81.3% Adult literacy	100.0 Primary to secondary school transition rate	23.7% Working population with no secondary school education	23.7% Households without radio access	27.8% Households without television access	89.2% Households without Internet access
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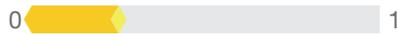
Economic Constraints SCORE: 0.463 RANK: 4/6 DISTRICTS ASSESSED



9.5% Average unemployment (2019)	13.8% Under-employment (2019)	70.6 Economic dependency ratio	26.3% Population in lowest wealth quintile
--	---	--	--



Gender Inequality SCORE: 0.253 RANK: 5/6 DISTRICTS ASSESSED



68.18 Domestic violence cases per 10k persons	0,177 Female economic opportunity score	5 Female economic opportunity rank	1.03 Female to male secondary school transition ratio	0.01 Female to male income ratio	0.35 Female to male labor force participation ratio	0.582 Female healthcare access score
2 Female healthcare access rank	10.6 Infant mortality rate (per 1,000 live births)	185.7 Maternal mortality rate (per 100k live births)	101.0 Adolescent birth rate (per 1,000 women)	26.2% Unmet need for contraception		



Population Pressures SCORE: 0.500 RANK: 3/6 DISTRICTS ASSESSED



3.37% Average annual population change	1.09% Average annual urban population change	14.60% Prevalence of stunting
--	--	---



COPING CAPACITY (CC)

RANK: 5 / 6 DISTRICTS ASSESSED
SCORE: 0.397

Stann Creek exhibits weaker Coping Capacity in the areas of Governance and Economic Capacity. The bar charts indicate the socioeconomic themes contributing to the overall Coping Capacity score.



Economic Capacity SCORE: 0.596 RANK: 2/6 DISTRICTS ASSESSED



55.9%

Households owning homes

21.2%

Change in active tourism business

\$510.46

Average revenue per room (BZ\$)

\$1,350.31

Median monthly income (BZ\$)

66.54

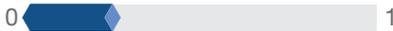
Labor force participation rate

15.6%

Population in highest wealth quintile



Governance SCORE: 0.240 RANK: 6/6 DISTRICTS ASSESSED



77.9%

Voter participation

45.2%

Households with municipal garbage collection

46.51

Crime rate per 10k persons



Environmental Capacity SCORE: 0.883 RANK: 3/6 DISTRICTS ASSESSED



100.0%

Land area with low interannual water variability

45.6%

Percent protected land area



Infrastructure Capacity SCORE: 0.649 RANK: 3/6 DISTRICTS ASSESSED



Health Care Capacity SCORE: 0.436 RANK: 3/6 DISTRICTS ASSESSED

3.22

Health care centers per 10,000 persons

6.12

Physicians per 10,000 persons

14.57

Nurses per 10,000 persons

82.7%

Immunization coverage

24.92

Average distance to hospital (km)

15.15

Hospital beds per 10,000 persons



Transportation Capacity SCORE: 0.804 RANK: 3/6 DISTRICTS ASSESSED

0.6

Road density (km)

5.6

Average distance to port facility (km)



Communications Capacity SCORE: 0.645 RANK: 3/6 DISTRICTS ASSESSED

2.11 Average distance to cell tower (km)	21.1% Households with fixed phone	75.0% Households with mobile phone
--	---	--



Energy Capacity SCORE: 0.762 RANK: 4/6 DISTRICTS ASSESSED

90.5% Households with electricity	85.1% Households using gas for cooking
---	--



Emergency Services Capacity SCORE: 0.598 RANK: 3/6 DISTRICTS ASSESSED

2,196 Emergency shelter capacity per 10,000 persons	34.4 Average distance to warehouse (km)	2.3 Average distance to emergency shelter (km)	9.9 Average distance to fire station (km)	5.9 Average distance to police station (km)
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RESILIENCE (R)

RANK: 2 / 6 DISTRICTS ASSESSED
SCORE: 0.528

Stann Creek's score and ranking are due to Very Low Vulnerability combined with Low Coping Capacity scores.

Below are the four thematic areas with the weakest relative scores:



Population Pressures



Economic Constraints



Governance



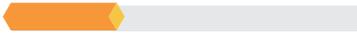
Economic Capacity



HAZARD-SPECIFIC RISK (HSR)



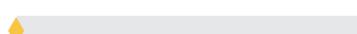
Earthquake



RANK: 2 / 6 DISTRICTS ASSESSED
SCORE: 0.309



Extreme Heat



RANK: 5 / 6 DISTRICTS ASSESSED
SCORE: 0.000



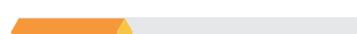
Flood



RANK: 4 / 6 DISTRICTS ASSESSED
SCORE: 0.221



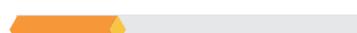
Landslide



RANK: 2 / 6 DISTRICTS ASSESSED
SCORE: 0.309



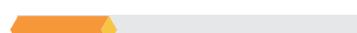
Storm Surge



RANK: 2 / 6 DISTRICTS ASSESSED
SCORE: 0.293



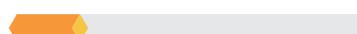
Tropical Cyclone Winds



RANK: 6 / 6 DISTRICTS ASSESSED
SCORE: 0.265



Wildfire



RANK: 5 / 6 DISTRICTS ASSESSED
SCORE: 0.184



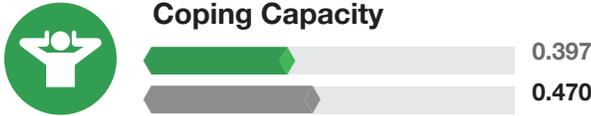
MULTI-HAZARD RISK (MHR)

3 / 6
RANK WITHIN DISTRICTS
SCORE: 0.459



Stann Creek's score and ranking are due to High Multi-hazard Exposure combined with Very Low Vulnerability and Low Coping Capacity scores.

Multi-hazard risk component scores compared to overall average country scores: ■ ■ STANN CREEK SCORE ■ COUNTRY SCORE



STANN CREEK RECOMMENDATIONS



Population Pressures

Stann Creek ranks the 3rd of 6 in population pressures in Belize. Contributing to the high score is high amounts of annual population change in the district. Migration into or out of urban centers makes planning difficult for disasters, community policing, providing of healthcare, and can strain government services. Stann Creek also has the second highest unemployment rate.

Rapid changes in population size and distribution can alter population vulnerability characteristics presenting planning challenges and destabilizing social, economic, and environmental systems. Increased population pressures require disaster managers to realign needs, institutional structures, and available resources to support delivery of basic resources before, during, and after an event.

STANN CREEK RECOMMENDATIONS

2

Economic Constraints

Stann Creek ranks 4th of 6 for economic constraints. This district has close to average unemployment in Belize, however it was a high 9.45%. Increasing funding for job training, trade skills, and continuing education can help the population gain new skills for the workforce. Additionally encouraging investment in sustainable agriculture, tourism and eco-tourism can build a long term, educated workforce.

Stann Creek also has a high economic dependency ratio (70.6). This can be seen as a measure of the financial pressure on the working population of a community. The higher the ratio, the more non-workers there are relative to the number of workers. With low levels of underemployment, this most likely points to a higher population of young or elderly within the care of the working population. Therefore, increasing support services for these particularly vulnerable populations will ease the burden on those who are working. This could include childcare subsidies, elderly daycares, and better access to healthcare services.

Additionally, catalyzing growth using the wealth of environmental assets that Stann Creek has to offer can help to increase economic capacity and protect the natural resources. Over 45% of the district is already in protection status. Creating economic opportunity through sustainable eco-tourism and cultural tourism, with input from the indigenous populations, can offer unique experiences for tourists, while bringing in economic stability and long term funding for continued conservation efforts

STANN CREEK RECOMMENDATIONS

3

Governance

Stann Creek ranks the lowest in Governance of the 6 districts in Belize. Contributing to the low score is the second highest major crime rate per 10,000 persons. High crime rates break down neighborhoods, degrade social and community ties, and destabilize civil society. Stann Creek also ranks 5th of 6 for voter participation. Low voter participation can mean disillusionment, indifference with the government, or lack of faith in government functions. This can directly impact a person's choices to participate in criminal activities.

Lower crime rates by addressing the drivers of criminal activity in society. Stann Creek has the second highest unemployment rate in the country, although it has moderate scores in economic capacity. Diversifying the types of available employment options may help bridge the gap and creating social programs for indigenous populations and lower income populations that are specific to their needs can help to build trust and community. Work to build faith in the citizens through community outreach and education programs to increase civic participation.

STANN CREEK RECOMMENDATIONS

4

Economic Capacity

Stann Creek has a moderate score in economic capacity. Lower economic capacity can exacerbate access to adequate health care, food stability, proper nutrition, and strain the environment and social services. Low amounts of home ownership are driving this score.

Evaluate disaster response and recovery plans to ensure the inclusion of economically vulnerable populations in long- and short-term recovery processes. Residents who rent properties are especially vulnerable in disasters due to lack of insurance or protection plans if their housing or jobs are destroyed. More renters can also mean changing or flexible populations who are not as invested in their community's success as a whole. Use opportunities in the growing tourism business sector (second highest growth in Belize from 2016-2019 and second highest revenue per room) to build community consensus on growth and sustainable development. This can mean creating industry and community partnerships that can be useful during disaster recovery. Create public policies guaranteeing equal opportunity and fair wages for all, even outside of tourism-based business.

Assess feasibility of government programs to assist in job creation and economic growth through education and short-term assistance designed to promote self-sustaining economic opportunities and decrease long-term reliance on government programs.

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BELIZE

TOLEDO

NDPBA DISTRICTS PROFILE

BELIZE TOLEDO

CAPITAL: PUNTA GORDA

Area: 4,813 km²

The Toledo District is located in the Southern region of Belize. This District is divided into 63 Cities, Towns and Villages: Punta Gorda (The Capital), is the main city. The District borders Stann Creek to the north, Cayo to the northwest, Guatemala to the west and south, and the Atlantic Ocean to the east. The main economic sources for the country of Belize continues to be tourism, sugar, banana, citrus, marine products and crude oil.



RISK AND VULNERABILITY COMPONENT SCORE



MULTI-HAZARD RISK (MHR) - Extremely High
Score: 0.719 • Rank: 1/6



RESILIENCE (R) - Very Low
Score: 0.285 • Rank: 6/6



MULTI-HAZARD EXPOSURE (MHE) - Very High
Score: 0.756 • Rank: 2/6



VULNERABILITY (V) - Extremely High
Score: 0.733 • Rank: 1/6



COPING CAPACITY (CC) - Very Low
Score: 0.304 • Rank: 6/6



Population (2010 Census)
30,785



Population in lowest wealth quintile
65.1%



Population with no secondary school education
76.4%



Households with unimproved water access
6.78% households



Infant mortality rate (per 1,000 live births)
29.5

*For more information on data and components please visit: <https://bit.ly/2LqVoUO>



MULTI-HAZARD EXPOSURE (MHE)

RANK: 2 / 6 DISTRICTS
SCORE: 0.756



MHE
0.756

Raw MHE
0.511

Relative MHE
1.000

ESTIMATED POPULATION AND CAPITAL EXPOSED TO EACH HAZARD:



Earthquake

100.0%

31,346

\$1.7 Billion

Critical Infrastructure Exposed:
99.3%



Extreme Heat

61.7%

19,333

\$318.2 Million

Critical Infrastructure Exposed:
75.4%



Flood

32.5%

10,178

\$971.8 Million

Critical Infrastructure Exposed:
38.4%



Landslide

6.9%

2,169

\$19.6 Million

Critical Infrastructure Exposed:
9.4%



Storm Surge

5.3%

1,664

\$47.7 Million

Critical Infrastructure Exposed:
4.4%



Tropical Cyclone Winds

100.0%

31,346

\$1.7 Billion

Critical Infrastructure Exposed:
100.0%



Wildfire

77.1%

24,171

\$829.4 Million

Critical Infrastructure Exposed:
83.3%



VULNERABILITY (V)

RANK: 1 / 6 DISTRICTS ASSESSED
SCORE: 0.733

Vulnerability in Toledo is primarily driven by Vulnerable Health Status and Information Access Vulnerability. The bar charts indicate the socioeconomic themes contributing to the overall Vulnerability score.



Environmental Stress SCORE: 0.451 RANK: 5/6 DISTRICTS ASSESSED



13.7%

Tree cover loss

-9.2%

Projected changes in annual precipitation

15.5%

Decline in land productivity



Vulnerable Health Status SCORE: 0.930 RANK: 1/6 DISTRICTS ASSESSED



189.37

TB infections per 10k persons

33.22

Dengue incidence per 100k persons

3770.76

Malaria incidence per 100k persons



Clean Water Vulnerability SCORE: 0.814 RANK: 1/6 DISTRICTS ASSESSED



6.78%

Households with unimproved water access

49.09%

Households with unimproved sanitation



Information Access Vulnerability SCORE: 0.909 RANK: 1/6 DISTRICTS ASSESSED



69.2%

Adult literacy

81.7

Primary to secondary school transition rate

26.5%

Working population with no secondary school education

26.5%

Households without radio access

52.7%

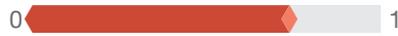
Households without television access

96.6%

Households without Internet access



Economic Constraints SCORE: 0.750 RANK: 1/6 DISTRICTS ASSESSED



5.7% Average unemployment (2019)	36.7% Under-employment (2019)	88.1 Economic dependency ratio	65.1% Population in lowest wealth quintile
--	---	--	--



Gender Inequality SCORE: 0.585 RANK: 2/6 DISTRICTS ASSESSED



99.72 Domestic violence cases per 10k persons	0,680 Female economic opportunity score	2 Female economic opportunity rank	1.05 Female to male secondary school transition ratio	0.28 Female to male income ratio	0.44 Female to male labor force participation ratio	0.964 Female healthcare access score
1 Female healthcare access rank	29.5 Infant mortality rate (per 1,000 live births)	304.9 Maternal mortality rate (per 100k live births)	98.0 Adolescent birth rate (per 1,000 women)	31.0% Unmet need for contraception		



Population Pressures SCORE: 0.692 RANK: 2/6 DISTRICTS ASSESSED



2.81% Average annual population change	2.12% Average annual urban population change	33.20% Prevalence of stunting
--	--	---



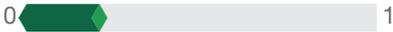
COPING CAPACITY (CC)

RANK: 6 / 6 DISTRICTS ASSESSED
SCORE: 0.304

Toledo exhibits weaker Coping Capacity in the areas of Communications Capacity and Communications Capacity. The bar charts indicate the socioeconomic themes contributing to the overall Coping Capacity score.



Economic Capacity SCORE: 0.213 RANK: 6/6 DISTRICTS ASSESSED



77.3%

Households owning homes

2.3%

Change in active tourism business

\$83.57

Average revenue per room (BZ\$)

\$988.84

Median monthly income (BZ\$)

60.57

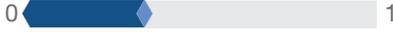
Labor force participation rate

7.2%

Population in highest wealth quintile



Governance SCORE: 0.333 RANK: 5/6 DISTRICTS ASSESSED



77.8%

Voter participation

21.6%

Households with municipal garbage collection

13.23

Crime rate per 10k persons



Environmental Capacity SCORE: 0.966 RANK: 2/6 DISTRICTS ASSESSED



100.0%

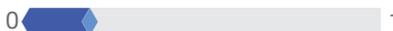
Land area with low interannual water variability

52.4%

Percent protected land area



Infrastructure Capacity SCORE: 0.175 RANK: 6/6 DISTRICTS ASSESSED



Health Care Capacity SCORE: 0.340 RANK: 6/6 DISTRICTS ASSESSED

12.76

Health care centers per 10,000 persons

4.55

Physicians per 10,000 persons

7.80

Nurses per 10,000 persons

78.6%

Immunization coverage

21.15

Average distance to hospital (km)

11.04

Hospital beds per 10,000 persons



Transportation Capacity SCORE: 0.000 RANK: 6/6 DISTRICTS ASSESSED

0.3

Road density (km)

12.5

Average distance to port facility (km)



Communications Capacity SCORE: 0.000 RANK: 6/6 DISTRICTS ASSESSED

5.37 Average distance to cell tower (km)	8.5% Households with fixed phone	55.5% Households with mobile phone
--	--	--



Energy Capacity SCORE: 0.000 RANK: 6/6 DISTRICTS ASSESSED

70.8% Households with electricity	58.4% Households using gas for cooking
---	--



Emergency Services Capacity SCORE: 0.536 RANK: 4/6 DISTRICTS ASSESSED

1,674 Emergency shelter capacity per 10,000 persons	12.9 Average distance to warehouse (km)	1.5 Average distance to emergency shelter (km)	19.7 Average distance to fire station (km)	11.0 Average distance to police station (km)
---	---	--	--	--



RESILIENCE (R)

RANK: 6 / 6 DISTRICTS ASSESSED
SCORE: 0.285

Toledo's score and ranking are due to Extremely High Vulnerability combined with Very Low Coping Capacity scores.

Below are the four thematic areas with the weakest relative scores:



Vulnerable Health Status



Information Access Vulnerability



Communications Capacity



Communications Capacity



HAZARD-SPECIFIC RISK (HSR)



Earthquake



RANK: 1 / 6 DISTRICTS ASSESSED
SCORE: 0.715



Extreme Heat



RANK: 1 / 6 DISTRICTS ASSESSED
SCORE: 0.503



Flood



RANK: 1 / 6 DISTRICTS ASSESSED
SCORE: 0.570



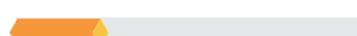
Landslide



RANK: 1 / 6 DISTRICTS ASSESSED
SCORE: 0.583



Storm Surge



RANK: 4 / 6 DISTRICTS ASSESSED
SCORE: 0.242



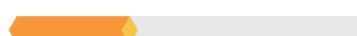
Tropical Cyclone Winds



RANK: 2 / 6 DISTRICTS ASSESSED
SCORE: 0.432



Wildfire



RANK: 3 / 6 DISTRICTS ASSESSED
SCORE: 0.330



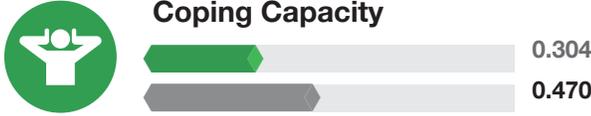
MULTI-HAZARD RISK (MHR)

1 / 6
RANK WITHIN DISTRICTS
SCORE: 0.719



Toledo's score and ranking are due to Very High Multi-hazard Exposure combined with Extremely High Vulnerability and Very Low Coping Capacity scores.

Multi-hazard risk component scores compared to overall average country scores: ■ ■ TOLEDO SCORE ■ COUNTRY SCORE



TOLEDO RECOMMENDATIONS



Vulnerable Health Status

Toledo scores the highest in the country for Vulnerable Health Status. Contributing to the high score is the highest rate of Malaria (from 2010) and the second highest for Tuberculosis rates (2010). While Malaria may be mostly eradicated in the country since 2019, in the case of Tuberculosis, immunization campaigns can be helpful, but so can improving environmental health conditions like indoor air quality during cooking, reducing overcrowded living circumstances and improving nutrition among the impoverished (PAHO/WHO, 2021). Early diagnosis of tuberculosis, systematic screening and treatment, collaborative tuberculosis/HIV activities, and preventive treatment of persons at high risk are among the pillars of the World Health Organization's Global Tuberculosis Strategy to end Tuberculosis worldwide (WHO, 2014).

Toledo also has the highest numbers of homes with unimproved sanitation (49%), the highest numbers for unmet need of contraception in women, and the highest numbers of infant and maternal mortality. It also has the highest percentage of its critical infrastructure exposed to hazards. Investing in public health campaigns for women and families, inclusive of immunization campaigns, can trickle to better long term health and nutrition. Increase clean sanitation access to lessen the spread of infectious disease in the community and increase access to critical care infrastructure like clinics and hospitals. Building protected health care infrastructure that caters to these needs in disaster prone areas is critical to providing short and long term emergency services.

TOLEDO RECOMMENDATIONS

2

Information Access Vulnerability

Toledo scores the highest in Belize for Information Access Vulnerability. 96% of homes in Toledo do not have internet leaving many to rely on broadband radio and television to receive their information. However, in Toledo, only 47% of households have television and 75% have radio. Lack of access to information hinders the ability of government agencies to share critical information during disasters. Lack of access to information can also contribute to limited access to education, healthcare, and other needs. In a district with highly vulnerable health status, the access to information is critical, especially to educate to reduce disease vectors of communicable diseases and ensure vaccination rates.

Increase network infrastructure to increase coverage, accessibility, and reliability of communications for day-to-day use and especially during disasters. Encourage telecommunication infrastructure development at a sustainable pace. Encourage education and the use public resources for access to the internet and television.

Furthermore, access to education and the ability to digest complex information can significantly improve a population's ability to find shelter, economic stability and fulfil nutritional needs during and after a disaster. 76% of Toledo's working population has had no secondary school and only 69% of the district's adults are literate (the lowest ranking in the nation). Advancing formal and informal education and job training programs and providing opportunities for secondary education for adults can improve these rankings and provide stability for the economy, as well as improving access to important health information.

TOLEDO RECOMMENDATIONS

3

Communications Capacity

Building upon the deficiencies in information access, Toledo also ranks the lowest of all 6 districts in Communications Capacity. Contributing to the low score is the lowest number of households with a mobile or landline telephone. Couple this with the lowest numbers of homes having access to internet, radio, or television and there is a significant barrier to getting information to the local population. Lack of capability to quickly communicate messages from government to citizens can greatly exacerbate the effects of a natural disaster. It also increases response times for first responders because many lack access to place a call.

Develop a sustainable plan to have every household have at least one kind of phone access. This ensures that messages can be passed during emergencies. Offer low or reduced cost mobile phone or offer incentives to increase the number of households with a mobile telephone line. This will need to be coupled with building out cell tower infrastructure, as Toledo also has the third furthest distance to cell towers from populated places. Identify secondary and tertiary communication plans in the event of emergencies that do not require the use of telephone lines. Work with nonprofits like the Red Cross or PAHO to help distribute emergency radios and encourage investment for telecommunications like Broadband.

TOLEDO RECOMMENDATIONS

4

Communications Capacity

Energy and Transportation Capacity are often linked. In Toledo, only 71% of households had access to electricity and only 58% had access to Gas for cooking. These two indicators were the lowest rates of any of the districts for energy capacity. Improve access to electricity from the Hydroelectric facility in the district and offer subsidies for more off-grid electricity options in areas where direct connections are not economically feasible.

Electrical access often follows maintained roadways. The Toledo district has the lowest road density of all the districts. It is a large district but there are populated areas without direct road access. This also usually correlates with these areas not having access to energy. Toledo also has the longest distance to ports and airports of all the districts. Building transportation capacity in the district will allow for additional energy and economic development to occur and can speed up the delivery of emergency and recovery supplies and materials after a disaster. Clear and direct access to ports and airports are critical to the flow of emergency relief.

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