Bolivia

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March 2022

BOLIVIA COUNTRY REPORT

2020 RAD-AID Certificate of Proficiency in Global Health Radiology

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GENERAL COUNTRY PROFILE

A. Introduction

Bolivia is truly a one-of-a-kind country both within its continent of South America and the world at large. For one, Bolivia is considered the highest and most isolated country in South America.[1] Secondly, Bolivia has the most significant proportion of indigenous people in South America, who make up around two-thirds of the population.[1] Thirdly, Bolivia has the second-largest natural gas reserves in South America, with tensions running high over the appropriate use of the resource, with indigenous groups saying the country should not relinquish their reserves as Bolivia's sole remaining natural resource.[1] Additionally, Bolivia is one of the world's largest producers of coca, the raw material for cocaine.[1] However, there is tension between the U.S. and Bolivia because the U.S. desires eradication of the crop while many of Bolivia's poorest farmers rely on it as their only source of income.[1]

B. Geography and Population

Climate and Landscape

The climate in Bolivia varies with altitude from humid and tropical to cold and semiarid.[2] This is the result of wide variability in topography.[2] The terrain consists of wide-ranging topographical features ranging from the rugged Andes Mountains with a highland plateau (known as the ***Altiplano***) 5000 meters above sea level to the Inter-Andean Valleys to the plains of the Amazonian and Chacoan lowlands less than 500 meters above sea level.[2] The major topographic features of Bolivia, including landforms and bodies of water as well as labels indicating bordering countries, are illustrated in Figure 1.[3]

Figure 1: Topographic Map of Bolivia

Borrowed from the Maps of Bolivia webpage from the Explore Bolivia website.[3]

The country is typically split into three topographical/climatological regions: the Andean area and arid highlands of the west, the sub-Andean and semi-tropical valleys of the middle third of the country, and the tropical lowlands of the east.[2]

Another different reference classifies five climatic regions within Bolivia:

i. The first region consists of the Andes and Altiplano (also known as the highlands in English), and it is located in the western third of the country.[3] In this region, the weather does not change dramatically between seasons, but there is a lot of

variation in the weather throughout the day.[3] It is said that all four seasons can be experienced in a single day in this region.[3] Generally speaking though, it is primarily considered to be a cold-weather region.[3]

ii. The second region consists of the ***Yungas*** and ***Chapare*** and is located on the eastern side of the Andes.[3] It is generally hot and humid in this region.[3] The climate does not change much throughout the year except when it rains during the wet season.[3]

iii. The third region, the Temperate Valleys, is located in the central and south-central parts of the country.[3] In this region, extreme temperature changes are daily or seasonally, unlike the other regions.[3] The predominant weather pattern is characterized as mild and Mediterranean-like with warm to hot days and pleasant nighttime temperatures.[3] It is in this region where the majority of fruits and vegetables in the country come from.[3]

iv. The fourth region is called The ***Chabo*** Scrub and Plains, known as Bolivia's desert.[3] This region is known for its very hot temperatures and low humidity.[3] The weather is dry here except during the rainy season.[3]

v. The fifth and final region, The Tropical Lowlands, is generally hot and humid year-round.[3] However, constant rain during the rainy season with torrential downpours is a common occurrence here as well.[3]

Four maps depicting various aspects of the climatological environment in Bolivia are depicted in Figure 2 (see next page).[4]

Figure 2: Climate Maps of Bolivia

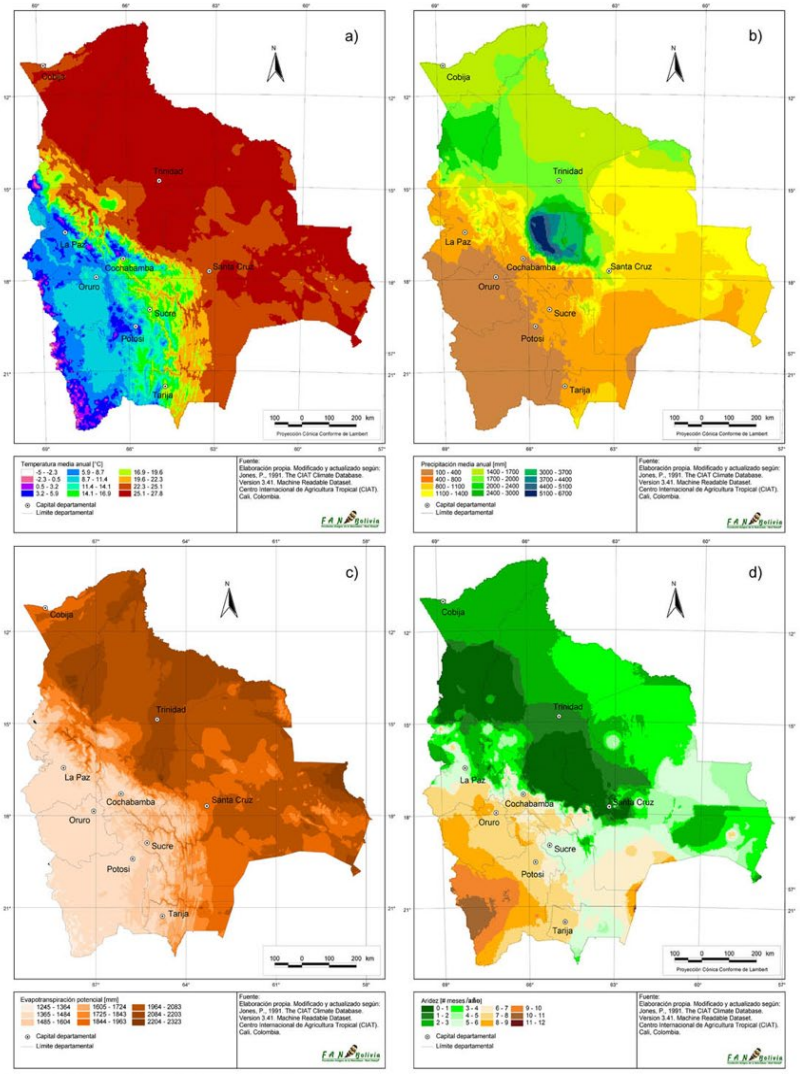


Fig. 2.12: Mapas climatológicos de Bolivia.
a) Patrones de temperatura media anual, b) Patrones de la precipitación media anual, c) Evapotranspiración potencial calculada según formula de Thornthwaite (1948), d) Isohigromenas según la formula de Lauer (1952).

Translation of caption:

a) Average annual temperature patterns (cooler colors represent lower temperatures and warmer colors represent higher temperatures),

b) Average annual precipitation patterns (darker shades of warmer colors represent lower precipitation and darker shades of cooler colors represent higher precipitation),

c) Estimated potential evapotranspiration (measured in mm, lighter shades represent less evapotranspiration and darker shades represent more higher evapotranspiration) according to the Thornthwaite equation,

d) Geographic zones by the number of humid months (represented by more green) and dry months (represented by more brown) annually according to the Lauer classification.

Borrowed from the Atlas of Bolivia webpage from the Ruhr Project website.[4]

The same reference outlining the five climatic regions described above proceeds to designate six general geographic regions, which roughly overlap with five climatic regions and are as follows:

i. The Andes consist of two major branches.[3] The first is made up of steep and rugged mountains with permanent snow and glaciers.[3] This branch contributes to the origin of many whitewater rivers that head to the eastern side of the Andes (Yungas) and towards northern Argentina.[3] This first branch also has mountains that rise to over 21,300 feet.[3] The second branch has isolated summits made primarily of volcanoes along the country's western border.[3] This second branch heads towards Chile.[3]

ii. The Altiplano (which means “high plain” in Spanish) is a bit of a misnomer as it is ironically not very flat.[3] This region is made up of valleys and small rolling hills as well as salt flats, volcanoes, rivers, and lakes.[3] It runs between the two branches of the Andes mountains.[3] There is sparse vegetation in this region.[3] This region is host to the world’s largest salt flat called ***Salar de Uyuni***.[3]

iii. The Yungas region runs along the eastern side of the Andes.[3] It is steep and rugged, with many jungle-covered mountains and whitewater rivers.[3]

iv. The highland valleys region lies east and southeast of the Altiplano.[3] It is made up of rolling hills and valleys and basins.[3] The soils are fertile and the climate is Mediterranean-like.[3] It is the second-most populous region.[3] Cities in this region include Cochabamba, Sucre, Tarija, and Potosi.[3]

v. The ***Gran Chaco*** is located within the southeastern corner of Bolivia, bordering Argentina and Paraguay.[3] It is generally flat with some rolling hills and valleys and a

few rivers.[3] It is fairly inhospitable, so only a few people live here.[3] There is a variety of plant life in this region.[3]

vi. The tropical lowlands of the ***Parana*** and Amazon make up most of the Bolivian territory.[3] It is composed of the upper Amazon basin in the north and northeast regions and the Parana basin in the east and south-east region.[3] A variety of ecosystems are present in this region ranging from high mountains and cloud forests to semi-tropical valleys and thick jungles and rivers.[3]

There are two general seasons in Bolivia: the wet and dry seasons.[2,3] The wet season occurs from late November to late March/early April during summertime when there are hot temperatures and humid conditions in the tropics and cold and wet conditions in the highlands.[2,3] Conversely, the dry season occurs throughout the remainder of the year, not covered by the wet season from May to October.[2,3] This season is essentially wintertime when temperatures are relatively colder, meaning freezing in the highlands and pleasant in the lowlands.[2,3] In most places, rainfall is heaviest during the summer.[2] The El Niño Southern Oscillation also impacts Bolivia.[2] La Niña leads to cold fronts and heavy rainfall during the summer.[2]

Geographic Area, Population, and UNHDI

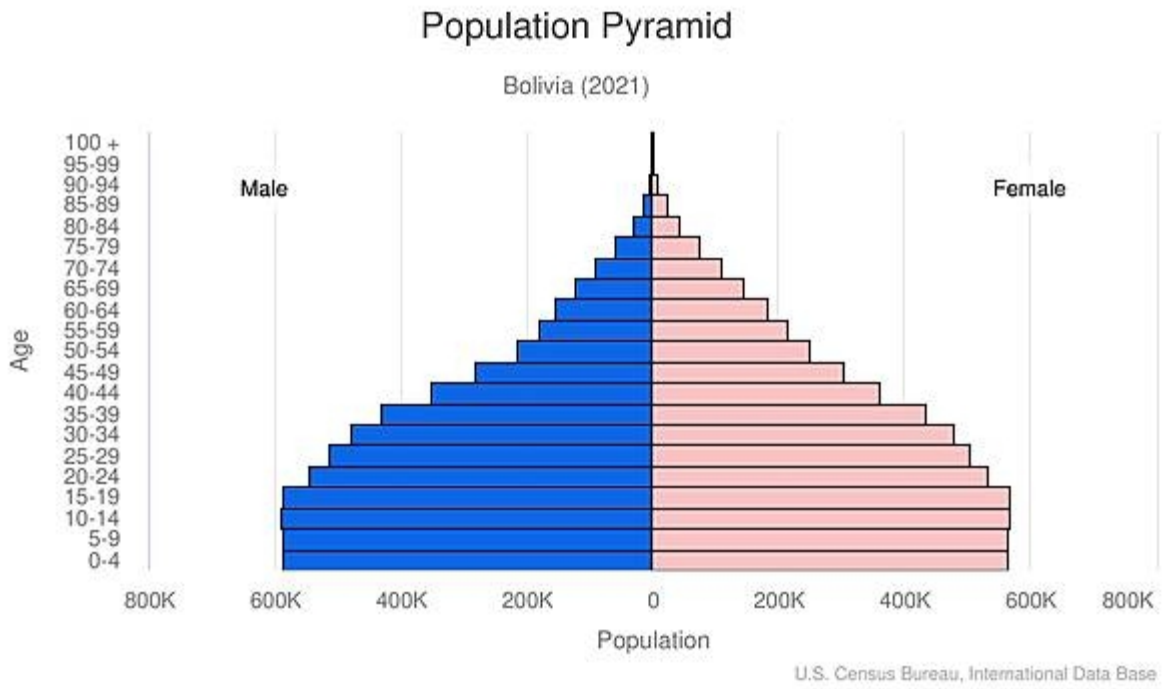
The geographic area of Bolivia is 1,098,581 square kilometers.[5] As of July 2021, the population estimate for Bolivia is 11,758,869 people, which ranks Bolivia as 81st in the world.[6] As of 2021, the annual population growth rate is 1.39%, which places Bolivia as 72nd in the world.[6] As of 2021, the percent of the total population in urban areas is 70.5%, implying that the remaining 29.5% of the population resides in rural areas.[6] The estimated rate of urbanization for the timespan of 2020-2025 is a 1.87% annual rate of change.[6]

As of 2020, the stratified population age distribution by percentage (number of males/number of females) is as follows:

- 0-14 years: 30.34% (1,799,925/1,731,565)[6]
- 15-24 years: 19.21% (1,133,120/1,103,063)[6]
- 25-54 years: 38.68% (2,212,096/2,289,888)[6]
- 55-64 years: 6.06% (323,210/382,139)[6]
- 65+ years: 5.71% (291,368/373,535)[6]

Figure 3 includes a population pyramid, which visually depicts an age-stratified breakdown of the Bolivia population by gender as of 2021 (see below).[6]

Figure 3: Bolivia Population Pyramid



Borrowed from the Bolivia webpage of the CIA World Factbook website.[6]

Per estimates from 2009, the demographic breakdown by ethnicity is as follows:

- 68% ***mestizo***[6]
- 20% indigenous[6]
- 5% white[6]
- 2% ***cholo/chola***[6]
- 1% black[6]
- 1% other[6]
- 3% unspecified[6]
- 44% indicated feeling part of some indigenous group (predominantly Quechua or Aymara)[6]

The United Nations human development index (UNHDI) score is 0.703, ranking Bolivia as 114th in its world.[7] For context, the UNHDI is a metric that summarizes a country's average achievement in three key dimensions: 1) life expectancy, 2) knowledge and education level, and 3) quality of life/standard of living.[7] As defined by the ability to read and write at the age of 15 or older, the literacy rate for the population of Bolivia is estimated to be approximately 92.5%.[6]

Geographic Landmarks and Local Attractions

Lake Titicaca sits on the shores of Copacabana, which is a town in Bolivia (not to be confused with the famous beach and neighborhood in Rio de Janeiro, Brazil).[8] Lake Titicaca is considered the highest navigable lake in the world.[8] It is a place known for fresh-caught ***trucha*** ("trout" in English).[8] It is also home to ***Isla del Sol*** (known as "Island of the Sun" in English), which is believed to be the birthplace of the Sun God and Inca empire.[8] Isla del Sol contains ancient ruins from 15th century Inca inhabitants.[8] Some Aymara villagers reside on the island as well.[8] It is only accessible by boat and navigable by foot.[8] The "Stations of the Cross" walk is a popular hike and attraction as well to get views of the surrounding area.[8]

Tiwanaku is a pre-Columbian archeological site in western Bolivia named after one of the most important civilizations prior to the Inca Empire.[8] It is one of the oldest and highest urban cities ever built.[8] Mysteries still abound about how, when, and by whom it was built.[8]

La Paz is the third-most populous city in Bolivia and the world's highest seat of government.[8] La Paz is full of modern restaurants, clubs, bars, historic plazas and colonial architecture.[8]

Yungas Road is also known as Death Road due to the historically high death rate of passengers and cyclists since its opening.[8] In fact, more than 30 cyclists have died since 1998![8] It is considered one of the world's most dangerous roads.[8] A popular tourist activity is to bike ride down the road, which stretches 69 km from La Paz to Coroico, a town within the Amazon rainforest portion of Bolivia.[8]

Maddi National Park is one of the most biodiverse places on the planet.[8] This park spans 7000 square miles from the Andes into the Amazon.[8] It is full of winding rivers, rolling grasslands, mosquito-laden lakes, and steep slopes, features that would most appeal to nature lovers.[8]

The Chiquitania Region is a rarely visited area with lots of exciting attractions.[8] It contains rock formations of ***Santiago de Chiquitos Mirador*** and hot thermal springs of ***Aguas Calientes***.[8] Activities to partake of here include jaguar watching at ***Kaa Iya*** National Park and sandboarding in ***Lomas de Arena***.[8]

The Oruro Carnival takes place in Oruro, a mining town in the Altiplano region of Bolivia, every year on a Saturday before Ash Wednesday.[8] It is one of the most famous festivals in all of South America.[8] The festival features folk dances with elegant costumes as well as

beautiful crafts and lively music with partying.[8] This event draws crowds of up to 400,000 people every year.[8]

Sucre is the fifth largest city in Bolivia.[8] The city was founded by the Spanish in the 16th century and has been designated a UNESCO world heritage site to protect its historically significant buildings.[8] Sucre is considered one of the cheapest and safest cities in South America.[8] While there are lots of cultural activities that take place in Sucre, it is a city that is not very affected by tourism.[8]

Cerro Rico Potosi is a mountain known for its rich natural resources, namely silver.[8] Potosi was once upon a time the wealthiest city in the Americas.[8] However, it is now one of the poorest cities in South America.[8] Millions of workers lost lives extracting silver in the past.[8] Unfortunately, the working conditions for miners are still subpar today, with lack of food, long hours, and breathing difficulties persisting as problems.[8]

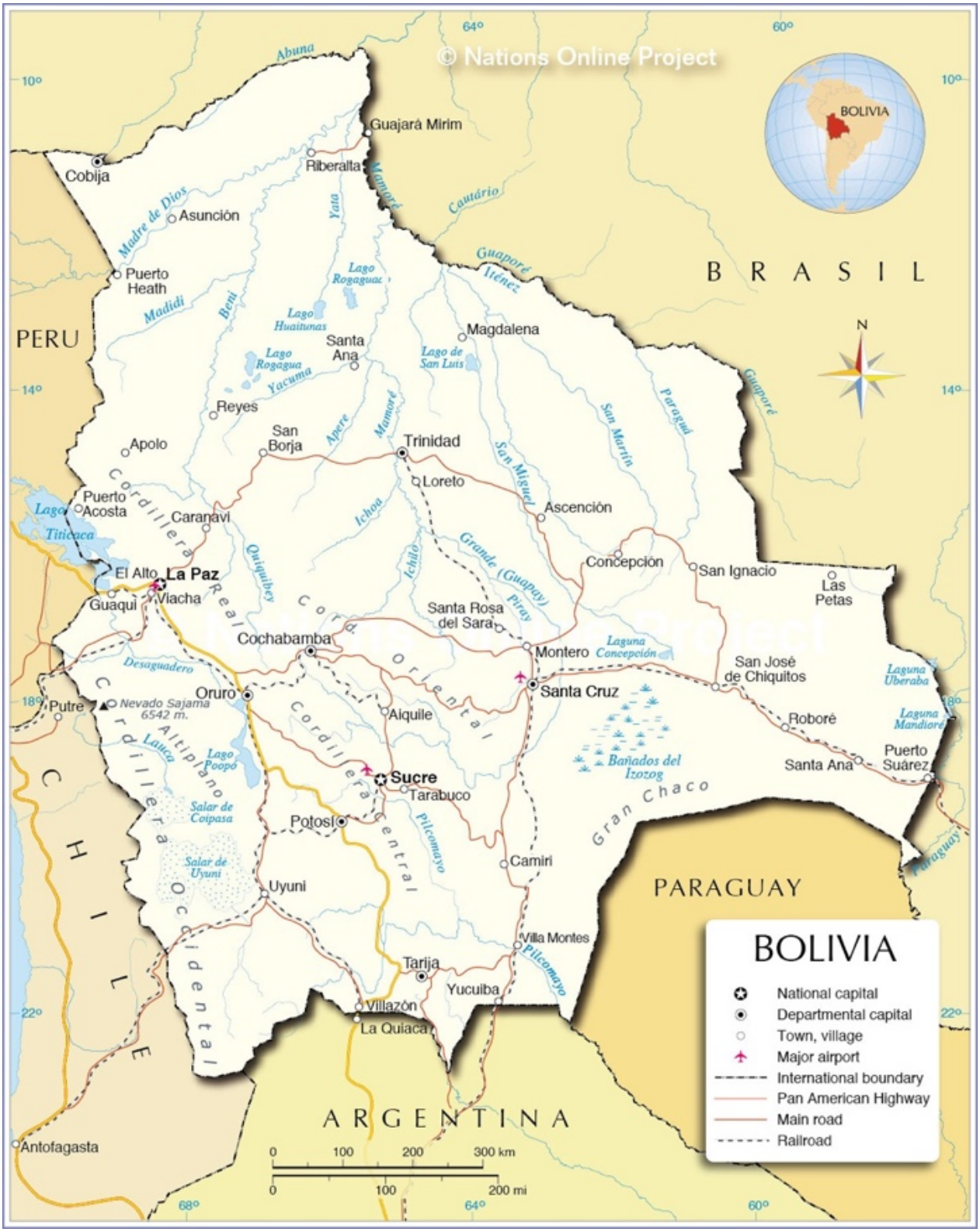
Salar de Uyuni is the world's largest salt flat.[8] Once upon a time, Salar de Uyuni was an inland ocean covering most of the Altiplano and extending to Lake Titicaca.[8] The water on top of the salt reflects the sky above when it rains so it essentially becomes a giant mirror.[8] There is lots of wildlife in this region, such as llamas, flamingos, and vizcachas to name a few.[8] The popular tourist activity here is for people to take perspective pictures.[8] One can also choose to sleep on salt beds and soak in natural hot springs here.[8]

Samaipata is a town located in the foothills of Santa Cruz.[8] Its main attraction is the World Heritage pre-Inca archeological site known as ***El Fuerte***.[8] El Fuerte is home to the largest carved stone in the world.[8] Samaipata is also the gateway to ***Parque Nacional Amboro,*** a nature preserve that is home to hundreds of avian and mammalian species.[8]

The Tarija Wine Region is worth a visit for wine enthusiasts.[8] ***Tarija*** is a small southern Bolivian town with a Mediterranean climate where some of South America's finest wines are produced.[8] Grapes are grown at a high elevation of around 1800 meters, making Tarija the highest wine producer in the world.[8] The local specialty drink in this region is called ***Singani***.[8] There are lots of quality food dishes available locally as well.[8]

To better understand the geography of Bolivia, a political map displaying the capital cities of Bolivia as well as other major cities, towns, regions, rivers, and roadways is included in Figure 4.[9]

Figure 4: Political Map of Bolivia



Borrowed from the Bolivia webpage of the Nations Online website.[9]

C. History and Culture

Indigenous Groups

There are 36 identified indigenous groups within Bolivia.[10] The vast majority of the indigenous population is either ***Aymara*** (25%) or ***Quechua*** (about 30%).[10] These two ethnic groups are mostly located in the highlands.[10] The Aymara emerged on the southern shores of Lake Titicaca after the fall of Tiwanaku.[10] Most of the Aymara currently live in the areas surrounding the lake and in the Yungas.[10] El Alto is the capital of Aymara culture.[10] The language they speak is called Aymara, the same as the name of the people themselves.[10]

The Quechua people are the descendants of the Inca.[10] An estimated 9-14 million Quechua speakers live in Bolivia, Peru, Ecuador, Chile, Colombia, and Argentina.[10] Many of the Quechua moved to the ***Chapare*** to harvest coca when mining declined in the 1980s.[10]

The Chipaya people are possibly direct descendants of the Tiwanaku.[10] Once upon a time, they practiced a unique religion of ritual sacrifices and annual digging up of the deceased to maintain a link between the living and the dead.[10] However, Christian evangelization has eradicated much of their traditional beliefs.[10]

The Kallawaya is a remote tribe in the mountains north of La Paz.[10] Their ancient language is now dying.[10] They are known for traveling as healers who wander the Andes along ancient foot trails collecting medicinal herbs along the way.[10] They have a history of medical innovation and serving as specialist healers who have harnessed the curative effects of up to 600 different regional plant species.[10]

The remaining indigenous groups (including ***the Guaraní*** and ***the Chiquitano***) are mostly located in the lowlands.[10] The Chiquitano live in the Chiquitania tropical savanna outside Santa Cruz, Beni and Brazil.[10] There is an estimated 180,000 Chiquitanos that reside in Bolivia,

a quarter of whom speak Chiquitano.[10] The arrival of Jesuits in the region forced once disparate groups to live together to develop a common language and style of dress.[10] The Guaraní are a group of hunter-gatherer tribes that share a common language with the Guaraní of Paraguay, Argentina, Uruguay and the Tupi of Brazil.[10] There is a ***"Museo Guarani"*** in Santa Cruz to learn more about them.[10] The ***Mojeño*** are from the Beni region and were quite large before the 17th century, with over 350,000 members at their peak.[10] Despite mostly being killed by European diseases, their language and culture have managed to survive until today.[10]

Religious Beliefs

There is a strong sense of cultural identity among the indigenous communities.[10] The women of indigenous descent who lived in cities used to be known as ***cholas,*** but now this term is considered derogatory by many, so the terms ***mestizas*** or ***indígenas*** are used instead.[10] There are diverse religious beliefs and practices among the indigenous groups, but the predominant and most populous groups (the Aymara and the Quechua) believe in natural gods and spirits based on animism dating back to the Inca times.[10] The ***Pachamama*** (Mother Earth) is the most famous recipient of sacrificial offerings with an appetite for coca, alcohol, and the blood of animals, specifically white llamas.[10] It is for this reason, there are llama fetuses in the markets that are wrapped up and traditionally purchased to be buried under new constructions.[10]

The Apus are mountain spirits protecting travelers.[10] ***The Illimani*** looks over the people of La Paz.[10] ***The Achachilas*** are spirits of the high mountains that are ancestors of the people and are considered important mountain gods.[10] ***The Ekeko***, or household god of abundance for Aymara, helps find homes for the homeless and ensures success for the businesspeople of Bolivia.[10]

The Fiesta de las Ñatitas (which translates to "Festival of Skulls" in English) is celebrated one week after the Day of the Dead.[10] It is an Aymara ritual where skulls are presented at a cemetery chapel in La Paz to be blessed by a Catholic priest and adorned with offerings of flowers, candles, and coca leaves and then carted back to owners' houses to bring good luck and protection.[10] Shamans and stone talismans are also popular in Bolivia.[10]

Fashion and Style

Weaving/clothing is an important aspect of the culture for many indigenous groups.[10] Several types of crafts and knitted items are commonly made, including a ***manta*** or ***aguayo*** (which is a square shawl made of two handwoven strips joined edge to edge), a ***chuspa*** (which is a coca pouch), a ***chullo*** (which is a knitted hat), and a ***falda*** (which is a skirt).[10] The ***mestiza*** dress (a traditional Aymara dress) is distinctive with a colorful appearance accompanied by a dark green, black, or brown bowler hat.[10] Women normally braid their hair into two long plaits joined by a tuft of black wool known as a ***pocacha*** and wear ***pollera*** skirts (brightly colored skirt), factory-made blouses, woolen ***chompas*** (sweaters/jumpers), short vestlike jackets, and cotton aprons.[10] The finest and most expensive ***vicuña*** fibers in the world are produced in ***Apolobamba*** and ***Parque Nacional Sajama***.[10]

Music and Dance

Musical traditions are varied throughout Bolivia, and the music, dances, and instruments that exist are distinctive based on their respective region of origin within Bolivia.[10] Andean musical traditions result from a mixture of influences from pre-Inca, Inca, Spanish, Amazonian, and African cultures.[10] The instrument Bolivia is most known for is the charango.[10] The ***charango*** is considered the king of all stringed instruments.[10] It is modeled after the Spanish ***vihuela*** and mandolin and gained popularity in Potosi during its mining peak.[10] The ***quena*** is

another popular instrument in Bolivia and is a small flute made of cane, bone, or ceramic.[10] The earliest examples made of stone found can be found near Potosi.[10] The jaguar-caller comes from the Amazon and is made of a hollowed-out calabash with a small hole into which the player inserts his or her hand.[10] Bolivian celebration dances tend to be hybrid, resulting from the influence of European and African dance traditions combined with traditional altiplano dances celebrating war, fertility, hunting prowess, marriage, and work.[10]

Natural Disasters

Bolivia has historically been susceptible to a variety of natural disaster events, including droughts, earthquakes, floods, landslides, and volcanoes.[11] In fact, flooding has been the most publicized natural disaster in recent years[11] Heavy rain from El Niño/La Niña in 2007 and 2008 led to floods and landslides that impacted over 250,000 people with a huge economic hit of approximately $443 million, which amounted to almost 4% of the GDP at the time.[11] Heavy seasonal showers of rain in 2013 and 2014 caused severe flooding and landslides with yet another huge economic hit of about $450 million.[11] Flooding is especially detrimental in the Amazonian lowlands, where 32% of the population lives in poverty.[11]

Other forms of natural disaster also pose a lesser but still real threat. Bolivia is classified as a medium hazard for earthquakes (meaning there is a 10% chance of a potentially damaging earthquake in the next 50 years).[12] Forest fires have also been a problem in the country's southeastern Santa Cruz region resulting from intentional burning to convert forest to farmland.[13] There is a concern for damaging impact to the flora and fauna of the Chiquitano dry forests (which are unique and found nowhere else in the world) as well as to human communities due to smoke-related illness and drinking water shortages.[13]

Rules of Etiquette

As with every country and culture, there are general principles of etiquette in Bolivia, which can be further subdivided into business, social, dining, and shopping categories.[14] As a disclaimer, keep in mind that these are GENERAL principles, and it is entirely possible to encounter exceptions to these rules depending on the situation and the people involved.

Some general principles of business etiquette are as follows:

- Be professional and follow the lead of your Bolivian host.[14]
- Bolivians tend to be open and hold meetings over meals rather than in the office.[14]
- Delivering a firm handshake, smiling, and maintaining eye contact are paramount.[14]
- Pecks on the right cheek are customary greetings, even between strangers.[14]
- Such pecks on the cheek are usually performed between either men and women or women and women.[14]
- Men do not do these kisses but rather draw each other in for a hug while engaged in a handshake.[14]
- Start a greeting with ***Buenos dias, Buenos tardes,*** or ***Buenas noches***.[14]
- Use formal titles when addressing or introducing folks.[14]
- Do not address someone by their first name unless they have already done so first.[14]
- Use ***usted*** (the formal Spanish word for the English word you) instead of ***tú*** (informal) until permitted to do otherwise (which may not happen and is ok).[14]
- Business is conducted more based on personal relationships than on personal qualifications.[14]

- Therefore, the use of a person's own first name when introducing themselves implies friendship and trustworthiness.[14]
- Also, one needs to exhibit patience because business takes time.[14]
- One should always be punctual with business meetings.[14]
- Agreed-upon deadlines may not be met on time.[14]
- People prefer conducting business in person instead of over email or phone calls.[14]
- Do not correct people in front of others, as this may be perceived as a hostile act.[14]
- Customarily in business, you should present your potential business partner with a gift and any family that is invited to attend.[14]
- Bolivians appreciate the attempt to speak Spanish even if it is less than perfect.[14]
- Men should wear suits and ties when conducting business while women should wear skirts down to the knee and a crisp shirt and jacket.[14]
- Smoking indoors is not against the law in Bolivia, and people often smoke in their offices.[14]
- Asking people not to smoke is considered rude, so plan accordingly to move any meeting outdoors if necessary.[14]

Some general principles of social etiquette are as follows:

- Personal space is not as much of a concept in Bolivia, so people will stand closely and take offense if you back away aggressively.[14] This includes touching and gesturing, which is a common practice.[14]

- Depending on the situation, Bolivians can be soft-spoken (in public in general) or loud and raucous (in bars and clubs).[14]
- It is customary to shake hands with the right hand and for women to kiss women on the cheek as well as men to kiss women on the cheek.[14]
- It is NOT customary for men to kiss men though.[14]
- Maintain eye contact at all times.[14]
- Always ask and find out about the expected attire.[14]
- Never turn your back on someone in order to pay attention to what someone else is saying, as this is considered very rude.[14]

Some general principles of dining etiquette are as follows:

- Do not eat with your hands as Bolivians rarely do this.[14]
- Never slurp, burp, or wipe your nose at the table.[14]
- Also, never use your napkin to sneeze or spit.[14]
- Do not directly hand things to someone when they ask you to pass it to them; place it next to them on the table.[14]
- Keep both hands visible at all times when dining as hiding hands can be misconstrued as a sign of deception.[14]
- Never say “I don’t like that” or make faces to express disgust.[14]
- Have the server pour wine even if the bottle is left at the table.[14]
- Do not arrive to another person’s house empty-handed for dinner.[14]
- People are generally expected to finish everything on the plate as leaving food on the plate can be considered rude.[14]
- Always wait for the host to make a toast before you do.[14]

- It is impolite to be distracted during dinner with your watch, answering your phone or texting, or reading a newspaper.[14]
- It is customary to be offered a drink immediately after being greeted and arriving at someone's home.[14]
- However, it is not polite to ask directly for something to eat or drink.[14]
- Find out in advance what the expectation is for dress/attire.[14]
- It is not polite to take the last item on a shared plate.[14]
- Ask your host/hostess where they would like you to sit for dinner.[14]
- It is ok to arrive 15-30 minutes late when invited to eat somewhere but not beyond that.[14]
- Everyone is expected to remain at the table until the last person is done eating.[14]
- Expect there to be a good deal of socializing (30-60 minutes) before the meal is served.[14]
- Guests are generally served first before others.[14]
- The host usually says ***provecho***, which is an invitation to begin eating.[14]
- In response, you should answer gracias before starting to eat.[14]
- Wait staff may not bring the check until you specifically request it.[14]
- Generally, it is not polite to split the tab up at a restaurant, and usually, the host will insist on paying for the meal (with the expectation that you should return the favor the next time).[14]
- Do not discuss business if it is clear it is a social function.[14]

Some general principles of shopping etiquette are as follows:

- Demeanor is important because the appearance of possessing significant wealth or acting like a foreigner will hinder your ability to gain a discount or fair deal.[14]
- Vendors will gauge your Spanish-speaking ability and use this in the bargaining process.[14]
- Figure out where it is appropriate to bargain and where it is not.[14]
- Do not appear overly enthused about making a purchase.[14]
- Do not counter-offer with a too low price as that might offend the vendor.[14]
- Make sure you have enough Bolivian currency to pay for what you want or that there is change available if you do not.[14]
- Do not expect other currencies to be accepted everywhere.[14]
- Be careful when picking up or trying on products.[14]
- As the saying goes: "if you break it, you buy it and, if you buy it, you own it." Returns are rarely accepted.[14]
- Do not expect the level of customer service you may be accustomed to if you are from the United States and do not take "bad" service too personally.[14]

Public Health and Healthcare Delivery

Under Evo Morales (a former president of Bolivia), a recently newly implemented universal health care system is known as the Single Health System (SUS)[15]. This system was officially initiated on March 1, 2019, and has received praise from the World Health Organization because it has produced reductions in child malnutrition and infant mortality rates with provisions of professional birthing support while improving the overall quality of life in

Bolivia as well.[15] The government has allocated $200 million to support the sustainability of the system by improving the necessary equipment, supplies, and infrastructure.[15]

This public health system ensures that millions of previously uninsured Bolivians now have free treatment.[15] An additional benefit of this effort is that it is intended to aid in preventing and early diagnosis of chronic non-communicable diseases.[15] Within the first 20 days of the system being launched, 30,000 Bolivians received free treatment, and 80,000 more received vaccinations through campaigns implemented in Cochabamba.[15] The expectation is for this system to reach an estimated five million people with coverage of at least 70% of the Bolivian population.[15] To aid in this effort, the plan is to utilize technology in the form of mobile phones and teleclinics to improve access to specialized medical care for the many who live in the hard-to-reach rural areas of Bolivia.[15]

Languages

The 2009 Bolivia constitution designates a total of 37 languages (which includes Spanish plus 36 indigenous languages) as official languages as recognized by the government.[6] The four most commonly spoken languages in Bolivia are Spanish, Quechua, Aymara, and Guarani.[6] Spanish is the primary official language spoken by 60.7% of the population.[6] Quechua is the next most commonly spoken language with 21.2% of the population as speakers.[6] Aymara is the third most commonly spoken language spoken by 14.6% of the population.[6] Guarani has the fourth most number of speakers with 0.6% of the population.[6] English is not widely spoken throughout Bolivia.[6]

Religions

Apart from the aforementioned indigenous religions, denominations of Christianity contribute to the most practiced religions in Bolivia.[6] As of 2018, Roman Catholicism leads the

way by a significant margin, with 70% of the population having an affiliation with this denomination.[6] To a much lesser extent, the next most commonly practiced religion is Evangelicalism, with 14.5% of the population reporting this as their preference.[6] A much smaller portion of the population identifies as either Adventist (2.5%) and Mormon (1.2%).[6] Agnostics (0.3%) and atheists (0.8%) each make up an even smaller portion of the population.[6] Another 3.5% of the population practices another religion, 6.6% hold no religious affiliation, and 0.6% of the population is unspecified.[6]

Important Holidays

The public holidays recognized in Bolivia are as follows in chronological order:

- January 1 – ***Año Nuevo*** (New Year's Day)[16]
- January 22 – ***Día del Estado Plurinacional*** (celebration of the new constitution)[16]
- February/March – ***Carnaval*** (religious and cultural festival)[16]
- March/April – ***Semana Santa*** (Good Friday)[16]
- May 1 – ***Día del Trabajo*** (Labor Day)[16]
- May/June – ***Corpus Christi*** (Christian observance of the Holy Eucharist)[16]
- June 21 – ***Año Nuevo Andino Amazónico y del Chaco*** (Andean New Year)[16]
- August 6 – ***Día de la Independencia*** (Independence Day)[16]
- November 2 – ***Día de los Muertos*** (All Souls' Day)[16]
- December 25 – ***Navidad*** (Christmas)[16]

Each of the nine departments throughout the country also has its own holiday, which are as follows, again in chronological order:

- February 10 – ***Oruro***[16]
- April 15 – ***Tarija***[16]
- May 25 – ***Chuquisaca***[16]

- July 16 – ***La Paz***[16]
- September 14 – ***Cochabamba***[16]
- September 24 – ***Santa Cruz***[16]
- October 11 – ***Pando***[16]
- November 10 – ***Potosí***[16]
- November 18 – ***Beni***[16]

Food Staples

Papas rellenas translates to "stuffed potatoes" in English.[17] This is a dish of Peruvian origin that has been adopted throughout the Bolivian Andes.[17] The dish consists of balls of mashed potatoes that are stuffed with a boiled egg or cheese.[17] These are sometimes coated with flour batter and deep-fried as well.[17]

Salteñas are a popular Andean snack.[17] They are essentially a baked pastry food filled with meat, veggies, egg, olives, and a slightly spicy sauce.[17]

Pique a lo macho is a dish incorporating various ingredients, including beef, sausage, onions, ***locotos*** (which are spicy peppers), boiled egg, and thickly cut fries.[17]

Tucumanas are pastries filled with various ingredients, including meat, diced vegetables, boiled egg, and spicy sauce.[17]

Buñuelos are a popular form of snack throughout Bolivia.[17] They come in sweet or savory flavors and are stuffed with cheese.[17] These snacks are traditionally eaten on Christmas morning with syrup and hot chocolates.[17]

Quinoa, a grain crop that is high in protein and essential amino acids without gluten, is a staple ingredient in many Bolivian households.[17]

Mondongo is made of ***chicharrón*** (crispy fried pork with a bit of the skin) alongside corn, potatoes, and a rich red aji chili sauce.[17] This is a typical dish of the city of Sucre.[17]

Picante de pollo translates to "spicy chicken" in English.[17] The main component of this dish is fried chicken with thick spicy sauce accompanied by boiled potatoes, rice, salad, and a parsley garnish.[17]

Chocolate is also a popular food staple in Bolivia, similar to many other world regions.[17] Bolivia is home to some of the most delicious chocolate in the world, made from cocoa grown in the Beni and Alto Beni regions of northeastern Bolivia.[17]

Choripán is a sandwich filled with chorizo.[17] It is usually eaten as an appetizer during preparation for a barbecue or sporting event.[17]

Plato paceño is a popular lunchtime dish in Bolivia consisting of corn, large lima beans, potatoes, and fried cheese.[17]

Sandwich de chola is a sandwich filled with roasted pork and crackling, pickled vegetables, and a spicy chili sauce.[17]

Silpancho is a platter consisting of white rice, boiled potatoes, meat, egg, and topped with salsa.[17] This dish originated in the city of Cochabamba.[17]

Majadito is a dish made of rice, dried meat, eggs, and fried bananas.[17] This is the traditional dish of the Bolivian departments of Santa Cruz and Beni.[17]

Sopa de maní is a soup made of peanuts usually mixed with beef ribs or chicken.[17] It is a typical dish of the city of Cochabamba but is usually reserved for birthdays or special occasions.[17]

Salchipapa is a popular fast food made with French fries and pan-fried sausage pieces.[17] It is frequently sold by street vendors and sometimes served with fried egg or cheese.[17]

Pacay is a type of fruit consisting of large black seeds surrounded by sweet white flesh with a taste compared to ice cream.[17]

Charque de llama comes from the Quechua phrase for "dried meat."[17] It is a type of jerky made using an ancient technique that allows meat to last.[17] It usually consists of dried llama meat served with corn, hard-boiled eggs, and cheese.[17]

Pampaku is a spicy meat dish cooked in a lump of coal or wood-fire pit and often served with potatoes, cassava, and plantain.[17]

Masaco de plátano is made from mashed yucca or mashed plantains and is typically eaten with afternoon tea/coffee.[17]

Anticucho is a meat dish that incorporates small skewered and grilled meat (usually the beef heart).[18] This dish is originally Peruvian in origin but gained popularity throughout Central and South America, including Bolivia.[18] It is typically accompanied by corn or boiled potatoes.[18]

Important Historical Events

Indigenous tribes grew crops and domesticated llamas in Cochabamba and Chuquisaca as 5,000 years ago.[19] The Aymara people then arrived in western Bolivia and founded the Tiwanaku empire 2,000 years ago by constructing a large city designed to house hundreds of thousands of people.[19] The empire eventually declined due to a prolonged period of drought around 1000 AD.[19] The Inca expanded the territory of their empire throughout the 15th century into the land around Lake Titicaca and modern-day Bolivia.[19] However, Spanish colonialism took over the Inca stronghold of Cuzco with eventual expansion into Bolivia.[19] Spanish conquistadors would go on to discover the mountain of Cerro Rico just outside Potosi and enslave millions of indigenous people to extract silver ore.[19]

Bolivia sought independence in 1809, making it the first country in South America to do so.[19] This resulted from civil unrest arising in Sucre and spreading across the rest of the continent, with other Spanish territories seeking independence.[19] It was not until 1824 that

Bolivia was liberated from Spanish rule by the Venezuelan freedom fighter Simón Bolívar, the namesake for the country.[19] Once Bolivia became fully independent, Simón Bolívar was appointed as its president a year later in 1825.[19] The official independence day for Bolivia is recognized as August 6, 1825.[19]

Bolivia has been involved in multiple military engagements throughout its existence.[19] Ten years following Bolivia's independence, The War of the Confederation took place.[19] The genesis of this war stems from the Bolivian president forming a confederation with Peru.[19] Neighboring countries (which included Peruvian dissidents, Chile, and the Argentine Confederation) saw the confederation as too powerful.[19] These neighboring countries began to elevate tariffs over the commercial trade routes of the Pacific.[19] This action led to an all-out war and the eventual defeat of the confederation in the battle of Yungay.[19]

The War of the Pacific took place in the 1870s.[19] Tensions were still running high between Bolivia and Chile for financial reasons.[19] Specifically, Chilean companies were extracting valuable resources in Bolivian territory.[19] Because of this, Bolivia raised taxes despite promising not to do so.[19] Chile moved in and occupied a portion of Bolivian territory while Bolivia was distracted with carnival celebrations in 1879.[19] Bolivia could never reclaim the stolen land and lost its coastline and direct ocean access forever.[19] This is still a sore point even today and is known contemporarily as the Atacama border dispute.[19]

The Chaco War took place between Bolivia and Paraguay around 1932.[19] This war was generated based on speculation that the large section of arid and largely uninhabitable land known as the northern Chaco was rich in oil.[19] This was the bloodiest South American war of the 20th century, resulting in 100,000 soldiers dying in the region.[19] Additionally, it resulted in

Bolivia losing a large amount of land being fought over.[19] Fortunately for Bolivia, it turned out not to have much oil there anyway.[19]

The Bolivian National Revolution took place in 1952 with the emergence of a political party known as the Revolutionary National Movement.[19] What came of the revolution was that power was taken away from the white ruling class, and new rights were awarded to marginalized indigenous communities.[19] These new rights focused on agrarian reform, nationalization of the mining sector, adult suffrage, and improved rural health and education.[19]

Several military dictatorships took power throughout the 1960s and 1970s, with military coups and counter-coups taking place before democracy was restored in the 1980s.[19] There were many problems during these years, including human rights abuses, corruption, social unrest, drug trafficking, severe financial mismanagement, and inflation reaching up to 50,000% that cost a large portion of the population to lose their assets.[19]

The privatization of Cochabamba's water supply and the country's natural gas reserves led to "The Water Wars" and "The Gas Wars," respectively.[19] These "wars" were sparked by the prohibitively high price increases for the average citizen along with profiteering from corporations, leading to widespread protests.[19] The Gas Wars, in particular, paved the way for Evo Morales to win the presidency in 2006 with 54% of the vote.[19] As a leader of the protest movement, he promised to nationalize the natural gas sector completely and to fight for the rights of coca farmers and indigenous people.[19]

Evo Morales was the first indigenous leader of Bolivia and one of the longest-serving leaders in Latin America with a tumultuous tenure.[20] He made many notable changes during his 14 years as president.[20] For one, he declared Bolivia as "plurinational" and secular to better reflect Bolivia's ethnic mix.[20] Two, he enacted socialist policies, cutting his own salary and those

of members of his cabinet shortly after taking office.[20] Three, Bolivia adopted the ***wiphala*** (which is a rainbow-colored indigenous flag) in 2009, flying alongside the traditional national flag in support of indigenous people.[20] Four, he continued to fight for the rights of coca farmers to keep coca-growing legal due to its religious and cultural significance despite pressure from the United States to eradicate the crop.[20] The U.S. felt he did not do enough to stop cocaine production and trafficking, leading to strained relations, including the ouster of the U.S. ambassador and USAID and the suspension of the DEA in Bolivia per his insistence.[20] Additionally, he nationalized the oil and gas industries to increase tax revenue, allowing Bolivia to increase its investment in public works projects and social programs to fight poverty and boost its foreign reserves.[20]

Evo Morales' main shortcoming while in office was his failure to secure access to the sea in the previously mentioned dispute with neighboring Chile.[20] Bolivia lost access to the Pacific Ocean in 1884 after their war with Chile, and in October 2018, the International Court of Justice ruled in favor of Chile maintaining possession of the beleaguered territory.[20] Other controversies that cropped up during his tenure were environmental in nature.[20] One was related to constructing a major road through the Amazon.[20] Another stemmed from frustrations over environmental issues from fires in the eastern areas of the country in 2019, specifically involving the use of "controlled burning," which was authorized for farmers to create bigger plots for crops.[20]

Towards the end of Evo Morales' fourth term, the constitutional court eliminated presidential term limits.[20] This happened despite a referendum in 2016 indicating that Bolivians did not want to amend the constitution.[20] The elimination of term limits would allow Evo Morales to run for a fifth term in office.[20] When he ultimately emerged as the election victor for

what would be his fifth consecutive term, the legitimacy of victory in the election was questioned.[20] This kicked off weeks of protest with international critics saying the electoral process had been manipulated.[20] The national and international uproar over the election results led to his resignation less than a month later.[20]

D. Government and Legal System

The current system of government in Bolivia is one of a democracy/presidential republic.[6] Bolivia has two different capital cities.[6] La Paz serves as the administrative capital, while Sucre serves as the constitutional capital for legislative and judicial affairs.[6] The legal system is described as a civil law system with influences from Roman, Spanish, canon (religious), French, and indigenous law.[6] The World Bank has generated six worldwide governance indicators for comparative analysis of country based on a normal distribution ranging in standard deviation from -2.5 to 2.5.[21] The following list uses a numerical score to indicate how Bolivia performs based on number of standard deviations away from the mean for each of the designated six governance indicators:

- 0.0 for "individual voice and accountability"[21]
- -0.2 for "political stability and absence of violence"[21]
- -0.3 for "government effectiveness"[21]
- -0.9 for "regulatory quality"[21]
- -1.1 for "the rule of law"[21]
- -0.6 for "control of corruption"[21]

The main political parties in Bolivia include the Christian Democratic Party (PDC), the Community Citizen Alliance (ACC), the Movement Toward Socialism (MAS), the National Unity (UN), and the Social Democrat Movement (MDS).[6]

Akin to the United States, the Bolivian government is comprised of three branches: the executive branch, the judicial branch, and the legislative branch.[6] For the executive branch, the current president is Luis Alberto (as of November 8, 2020).[6] The president serves as both chief of state and head of government.[6] In addition to the president, the executive branch also includes the vice president (who is currently David Choquehuanca Cespedes as of the time of this writing) and a cabinet that the president appoints.[6] Within the judicial branch, there are multiple "highest courts" including the Supreme Court (with twelve judges organized into civil, penal, social, and administrative chambers), the Plurinational Constitutional Tribunal (with seven primary and seven alternate magistrates), the Plurinational Electoral Organ (with seven members and six alternates), the National Agro-Environment Court (with five primary judges and five alternates), and the Council of the Judiciary (with three primary and three alternate judges).[6] Judges are pre-selected by the Plurinational Legislative Assembly for these "highest courts" and elected to six-year terms by direct popular vote.[6] Additionally, there are numerous additional subordinate courts, including District Courts in each of the nine administrative districts.[6] The legislative branch consists of a bicameral Plurinational Legislative Assembly with two Chambers: the Chamber of Senators (with 36 seats and members serving five-year terms) and the Chamber of Deputies (with 130 seats and members also serving five-year terms).[6]

E. Economy and Employment

Although Bolivia is considered a resource-rich country, it remains one of the least developed countries in Latin America because of state-oriented policies deterring foreign capital

investment.[6] The typical income level is classified as **lower middle income** according to The World Bank.[21] The major unit of currency used in Bolivia is called a ***boliviano***.[6] The exchange rate to USD is approximately 6.91 as of the time of this writing.[6] The major industries in Bolivia include mining, smelting, electricity, petroleum, food and beverages, handicrafts, clothing, and jewelry.[6] As of 2017, the GDP composition broken down by sector is 13.8% for agriculture, 37.8% for industry, and 48.2% for services.[6] The percentage occupation breakdown within these same sectors is 29.4% for agriculture, 22% for industry, and 48.6% for services.[6] Major imports include cars, refined petroleum, delivery trucks, iron, and buses.[6] Major exports include natural gas, gold, zinc, soybeans and soy products, oil, tin, silver, and lead.[6]

As of 2017, the major import partners of Bolivia in descending order by percentage breakdown of imported goods and services are Brazil (22%), Chile (15%), China (13%), Peru (11%), Argentina (8%), and the U.S. (7%).[6] Conversely, as of 2019, the major export partners, again in descending order by percentage breakdown of exported goods and services, are Argentina (16%), Brazil (15%), the United Arab Emirates (12%), India (10%), the United States (6%), South Korea (5%), Peru (5%), and Colombia (5%).[6] The most important agricultural products grown and harvested in Bolivia are sugar cane, soybeans, potatoes, maize, sorghum, rice, milk, plantains, poultry, and bananas.[6]

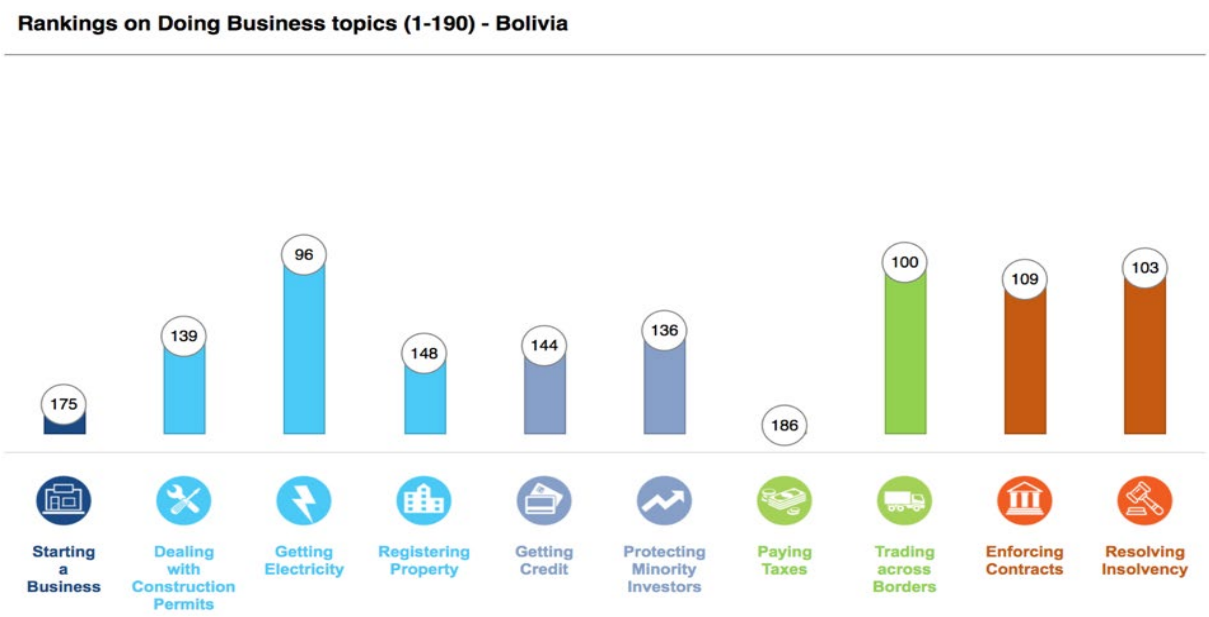
The gross domestic product of Bolivia based on purchasing power parity, or GDP (PPP), is $100.445 billion, which ranks 90th in the world.[6] The gross domestic product (GDP) per capita is $8,724, which ranks 149th in the world. The gross national product (GNI) is $39.27 billion, which ranks 96th in the world.[22] The gross national product (GNI) per capita per the Atlas method is $3,370, which ranks 128th in the world.[23] The gross national product per capita based on purchasing power parity, or GNI (PPP), is $7,670, which ranks 128th in the world.[23]

For the entire country, the labor force is made up of approximately 5.719 million people based on a 2016 estimate, which ranks 71st in the world.[6] The unemployment rate is approximately 4%, which ranks 58th in the world.[6] The portion of the population below the poverty line is 37.2% based on the international standard of $2/day.[6] The annual inflation rate in Bolivia is 1.8%, which ranks 99th in the world.[6]

Lastly, another important indicator to evaluate each country's economic performance is the "ease of doing business" index, generated by the World Bank.[21] Based on this specific index, Bolivia ranks 150th overall in the world.[21] Subdividing this index into its components (which is also graphically displayed in Figure 5 – see below), here is how Bolivia fares on the global stage with regards to a variety of essential factors:

- 175th for "starting business"[21]
- 139th for "dealing with construction permits"[21]
- 96th for "getting electricity"[21]
- 148th for "registering property"[21]
- 144th for "getting credit"[21]
- 136th for "protecting minority investors"[21]
- 186th for "paying taxes"[21]
- 100th for "trading across borders"[21]
- 109th for "enforcing contracts"[21]
- 103rd for "resolving insolvency"[21]

Figure 5: World Bank Ease of Doing Business Index Breakdown for Bolivia



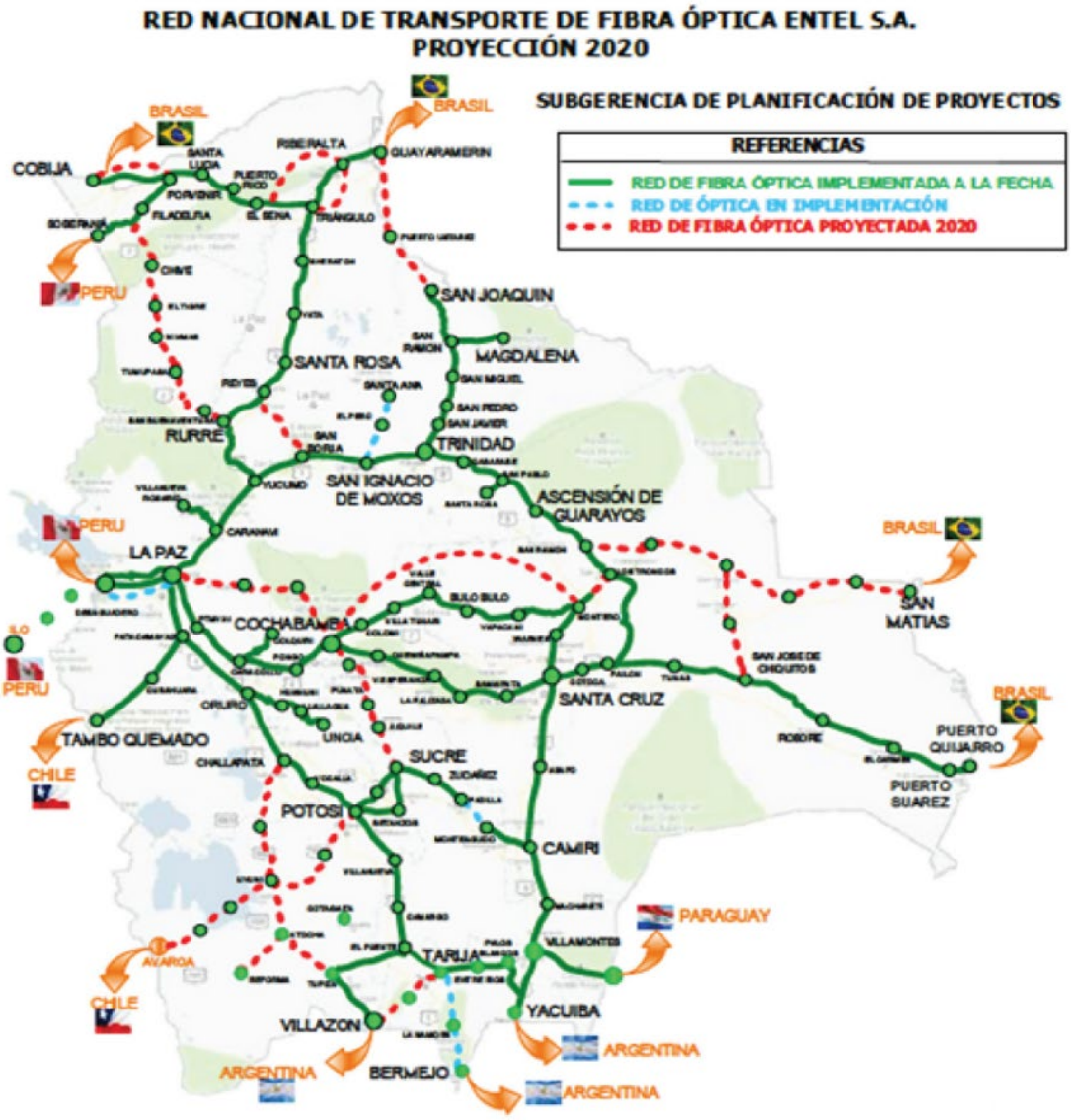
Borrowed from the World Bank Open Data website.[21]

F. Physical and Technological Infrastructure

Communications Technology

In Bolivia, the number of Internet users as a percentage of the population is 44.3%.[24] The total number of mobile cellular subscriptions is 11,445,830.[24] The number of fixed telephone subscriptions is 711,961.[24] The percentage of households with a computer is 81.5% in the developed world versus 33.9% in Bolivia.[24] The percentage of households with Internet access is 82.9% in the developed world versus 26.6% in Bolivia.[24] Out of the access technologies used in Bolivia, 96% are mobile while 4% are fixed.[24] A map depicting the national fiber-optic communications network throughout Bolivia is included in Figure 6.[24]

Figure 6: Fiber Optic Network Map



Green lines represent the fiber-optic network in place and have been established already. Blue lines represent the fiber-optic network that is in progress and being developed. Red lines represent the fiber optic network projected to be developed by 2020.

Borrowed from the International Telecommunication Union report on Bolivia regarding connectivity challenges and opportunities.[24]

The postal mail service is no longer operational in Bolivia as of March 1, 2018.[25] This service was known as ***Empresa de Correos de Bolivia*** (also known as ECOBOL for short) and was fast and reliable once upon a time.[25] However, it became more unreliable after the early 2000s with complaints of Christmas cards arriving in July and some mail not arriving at all.[25] Part of the issue was that ECOBOL had no mail carriers but rather employed a team of private couriers to deliver posts by hand, relying on vague descriptions to work with as opposed to specific addresses.[25] Now, for officially signed or stamped documents, Bolivia uses an industry known as ***enviadores*** that are hired to transport bureaucratic paperwork from one side of each city to the other.[25] There is also a system for packaged goods known as ***encomiendas*** throughout Bolivia, where these packages are loaded on the bottom of passenger buses and sent to their destination.[25] The plan is for ECOBOL to be replaced by a new system through the ***Agencia Nacional/Agencia Boliviana de Correos***.[25]

Availability, Consumption, and Reliability of Power Sources

A quarter of the electricity generated in Bolivia comes from renewable sources.[26] The breakdown of energy sources by percentage includes oil (45.54%), natural gas (41.01%), biofuels/waste (11.23%), hydro (2.15%), and wind/solar/etc. (0.07%).[26] The total electricity consumption throughout Bolivia is 9.0 TWh.[26] The electricity consumption per capita is approximately 0.8 MWh/capita.[26] About 12% of the population lacks access to electricity with an estimated 1.2 million people living without electricity.[26] The total population electrification rate is 93%, with 99.3% of the urban population receiving electricity versus a lesser percentage of the rural population at 79.1%.[26]

Transportation

The infrastructure in Bolivia is suited to accommodate different modes of transportation. There are 21 airports with paved runways and 834 airports with unpaved runways.[6] The total roadway distance is 90,568 kilometers, which ranks 54th in the world.[6] This roadway distance breaks down into 9,792 kilometers of paved roadways and 80,776 kilometers of unpaved roadways.[6] The total waterway distance is 10,000 kilometers, which ranks 13th in the world.[6] ***Puerto Aguirre*** is an important river port within Bolivia that connects to the Paraguay/Parana waterway.[6] Car ownership is relatively uncommon in Bolivia.[27,28] Nonetheless, there are an estimated 821,000 registered vehicles in Bolivia as of 2008.[28] Because a large portion of these registered cars (at least 300,000) is in La Paz, the capital, traffic is a problem in La Paz.[28] Also, there are around 40,000 traffic accidents every year.[27] The ***Teleférico*** was installed as a cable car public transportation system to alleviate traffic throughout La Paz and facilitate the commute between El Alto and La Paz.[27,28]

NATIONAL HEALTH CARE SECTOR

A. National Health Care Profile

The mortality data available for Bolivia covers both the general population and specific subgroups based on important, widely accepted public health metrics.[29-30] For the overall population, the estimated crude death rate in 2017 was 5.98 deaths per 1,000 people in the population.[29] As of 2016, the proportional causes of mortality throughout Bolivia by percentage breakdown is as follows:

- 23% cardiovascular diseases[30]
- 11% cancers[30]
- 5% chronic respiratory diseases[30]
- 4% diabetes[30]
- 21% other NCDs[30]
- 22% communicable, maternal, perinatal, and nutritional conditions[30]
- 13% injuries[30]

Of note, non-communicable diseases (NCDs) account for 64% of all deaths.[30] In Bolivia in 2021, the average life expectancy at birth is 70.7 years for the total population, 67.87 years for males, and 73.67 years for females, which ranks 168th in the world.[6]

Infant mortality has been estimated to occur at a rate of 44 per 1,000 live births (according to statistics from 2013).[29] This more current infant mortality measurement reflects a 46.3% reduction since 1989 when it was 81.9 per 1,000 live births.[29] Child mortality occurs at a rate of 51.5 deaths per 1,000 live births (per statistics from 2013) for children under 5 years old.[29] This current measurement also reflects a significant improvement as child mortality fell from 129 to 56 deaths per 1,000 live births between 1989 and 2013.[29] Maternal mortality occurs at a rate of 160 deaths per 100,000 live births (per statistics from 2011).[29] This measurement is 14.4% lower as compared to 2000, when the rate was 186 maternal deaths per 100,000 live

births.[29] Across the country, maternal mortality ranges from 286 (in La Paz) to 60 (Santa Cruz) deaths per 100,000 population.[29] The main contributors to maternal mortality by percentage breakdown are hemorrhage (59%), pregnancy-induced hypertension (19%), miscarriage (13%), and infection (7%).[29]

Age-Stratified and Cause-Specific Mortality Data

What follows is the breakdown of the number of deaths per 1,000 people in the population categorized by cause of death with further stratification by age demographic.

Table 1: Age-Stratified Mortality Rates – All Causes

Age (years)	Number of Deaths (per 1,000)[a]
All ages	71.2
0-4	9.3
5-14	1.5
15-29	6.1
30-49	10.0
50-59	6.7
60-69	9.9
70+	27.7

Table 2: Age-Stratified Mortality Rates – Communicable, Maternal, Perinatal, and Nutritional Conditions

Age (years)	Number of Deaths (per 1,000)[a]
All ages	15.9
0-4	6.6
5-14	0.4
15-29	1.0
30-49	1.9
50-59	0.8
60-69	1.1
70+	4.1

Table 3: Age-Stratified Mortality Rates – Malignant Neoplasms

Age (years)	Number of Deaths (per 1,000)[a]
All ages	7.9
0-4	0.1
5-14	0.1
15-29	0.2
30-49	1.0
50-59	1.1
60-69	1.8
70+	3.6

Table 4: Age-Stratified Mortality Rates – Mental and Substance Use Disorders

Age (years)	Number of Deaths (per 1,000)[a]
All ages	0.6
0-4	0.0
5-14	0.0
15-29	0.1
30-49	0.2
50-59	0.1
60-69	0.1
70+	0.1

Table 5: Age-Stratified Mortality Rates – Neurological Disorders

Age (years)	Number of Deaths (per 1,000)[a]
All ages	2.6
0-4	0.0
5-14	0.0
15-29	0.1
30-49	0.1
50-59	0.1
60-69	0.2
70+	2.0

Table 6: Age-Stratified Mortality Rates – Cardiovascular Diseases

Age (years)	Number of Deaths (per 1,000)[a]
All ages	16.7
0-4	0.1
5-14	0.1
15-29	0.6
30-49	1.9
50-59	1.8
60-69	2.9
70+	9.3

Table 7: Age-Stratified Mortality Rates – Respiratory Diseases

Age (years)	Number of Deaths (per 1,000)[a]
All ages	3.3
0-4	0.1
5-14	0.0
15-29	0.1
30-49	0.2
50-59	0.2
60-69	0.5
70+	2.3

Table 8: Age-Stratified Mortality Rates – Injuries

Age (years)	Number of Deaths (per 1,000)[a]
All ages	9.4
0-4	0.7
5-14	0.6
15-29	3.1
30-49	2.7
50-59	0.8
60-69	0.6
70+	0.9

[a]Derived from the World Health Organization Global Disease Burden Database[31]

Age-Standardized and Crude Death Rates

What follows is the breakdown of the overall number of deaths by cause per 100,000 people in the population with stratification into age-standardized rates (which adjusts for the age distribution of the underlying population and the effects of age on different diseases/conditions) and crude rates (which, conversely, are directly influenced by the age distribution of the underlying population).

Table 9: Age-Standardized and Crude Death Rates – All Causes

Type of Rate	Number of Deaths (per 100,000)[a]
Age-standardized	731.2
Crude	654.1

Table 10: Age-Standardized and Crude Death Rates – Communicable, Maternal, Perinatal, and Nutritional Conditions

Type of Rate	Number of Deaths (per 100,000)[a]
Age-standardized	145.7
Crude	146.4

Table 11: Age-Standardized and Crude Death Rates – Malignant Neoplasms

Type of Rate	Number of Deaths (per 100,000)[a]
Age-standardized	89.6
Crude	73.0

Table 12: Age-Standardized and Crude Death Rates – Mental and Substance Use Disorders

Type of Rate	Number of Deaths (per 100,000)[a]
Age-standardized	6.1
Crude	5.2

Table 13: Age-Standardized and Crude Death Rates – Neurological Disorders

Type of Rate	Number of Deaths (per 100,000)[a]
Age-standardized	25.5
Crude	23.7

Table 14: Age-Standardized and Crude Death Rates – Cardiovascular Diseases

Type of Rate	Number of Deaths (per 100,000)[a]
Age-standardized	180.6
Crude	153.4

Table 15: Age-Standardized and Crude Death Rates – Respiratory Diseases

Type of Rate	Number of Deaths (per 100,000)[a]
Age-standardized	34.5
Crude	30.3

Table 16: Age-Standardized and Crude Death Rates – Injuries

Type of Rate	Number of Deaths (per 100,000)[a]
Age-standardized	90.3
Crude	85.9

[a]Derived from the World Health Organization Global Disease Burden Database[31]

Age-Stratified Disability-Adjusted Life Years (DALYs)

What follows is the breakdown of disability-adjusted life years (DALYs) across the population, again categorized by cause of morbidity and/or mortality, with further stratification by age demographic. A disability-adjusted life year is a public health measure defined by the total number of years of life lost due to premature mortality combined with the number of years of life lost due to living in disability. It is an effective way to compare diseases/conditions that cause death without much disability and diseases/conditions that cause disability without death.

Each unit represents 1,000 DALYs (multiply the numbers given by 1,000 to get the total DALYs for each subgroup across the entire population).

Table 17: Age-Stratified Disability-Adjusted Life Years (DALYs) – All Causes

Age (years)	Number of DALYs (by 1,000s)[a]
All ages	3814.6
0-4	901.9
5-14	232.5
15-29	646.6
30-49	792.0
50-59	361.6
60-69	373.2
70+	506.7

Table 18: Age-Stratified Disability-Adjusted Life Years (DALYs) – Communicable, Maternal, Perinatal, and Nutritional Conditions

Age (years)	Number of DALYs (by 1,000s)[a]
All ages	1080.8
0-4	633.8
5-14	65.3
15-29	107.3
30-49	136.2
50-59	40.7
60-69	37.9
70+	59.5

Table 19: Age-Stratified Disability-Adjusted Life Years (DALYs) – Malignant Neoplasms

Age (years)	Number of DALYs (by 1,000s)[a]
All ages	234.8
0-4	9.2
5-14	10.7
15-29	16.7
30-49	50.2
50-59	40.9
60-69	51.6
70+	55.4

Table 20: Age-Stratified Disability-Adjusted Life Years (DALYs) for Mental and Substance Use Disorders

Age (years)	Number of DALYs (by 1,000s)[a]
All ages	245.8
0-4	1.7
5-14	21.9
15-29	89.1
30-49	83.3
50-59	23.3
60-69	15.4
70+	11.2

Table 21: Age-Stratified Disability-Adjusted Life Years (DALYs) for Neurological Disorders

Age (years)	Number of DALYs (by 1,000s)[a]
All ages	134.8
0-4	2.7
5-14	9.1
15-29	29.3
30-49	31.4
50-59	9.9
60-69	9.7
70+	32.8

Table 22: Age-Stratified Disability-Adjusted Life Years (DALYs) for Cardiovascular Diseases

Age (years)	Number of DALYs (by 1,000s)[a]
All ages	455.8
0-4	13.5
5-14	8.7
15-29	46.7
30-49	100.7
50-59	70.8
60-69	84.5
70+	131.0

Table 23: Age-Stratified Disability-Adjusted Life Years (DALYs) for Respiratory Diseases

Age (years)	Number of DALYs (by 1,000s)[a]
All ages	107.2
0-4	7.7
5-14	15.6
15-29	13.2
30-49	15.2
50-59	9.7
60-69	14.4
70+	31.3

Table 24: Age-Stratified Disability-Adjusted Life Years (DALYs) for Injuries

Age (years)	Number of DALYs (by 1,000s)[a]
All ages	588.4
0-4	65.2
5-14	51.6
15-29	229.6
30-49	161.1
50-59	35.8
60-69	23.9
70+	21.2

[a]Derived from the World Health Organization Global Disease Burden Database[32]

Public Health and Common Diseases/Illnesses

Vector-Borne Diseases

Common vector-borne diseases endemic to Bolivia include malaria, dengue fever, Chagas disease, Zika virus, and cutaneous leishmaniasis.[29] Bolivia experienced a reduction of malaria by 56% between 2000 and 2010 due to the introduction of artemisinin-based combination therapy and large-scale use of insecticide-impregnated mosquito nets.[29] As a result, there were no deaths attributed to malaria between 2008 and 2014.[29] In Bolivia, there were 22,846 cases of dengue reported in Santa Cruz, Beni, and Tarija in 2014.[29] There were 1,810 total reported cases of cutaneous leishmaniasis in 2010.[29]

Vaccine-Preventable Diseases

Examples of vaccine-preventable diseases that are endemic to Bolivia include pertussis, pneumococcus, polio, human papillomavirus (HPV), measles, rubella, and diphtheria.[29] An upsurge in rates of pertussis began in 2013 in infants younger than 6 months old.[29] A vaccine for pneumococcus was introduced in 2014 with 56.9% coverage at that time within the population.[29] The calculated third dose coverage of polio was 88.1% in 2015 with the last recorded case in 1989.[29] The HPV vaccine was introduced in 2016 with the plan to start vaccinating girls ages 10-12 years in 2017.[29] A combined measles and rubella campaign was initiated in 2015 for children ages 2-4 years with 72.6% coverage provided and no confirmed cases in the country since 2006.[29] Diphtheria remains a problem, although it is a small one with only four cases recorded as recently as 2010.[29]

Zoonoses

A zoonosis is a type of disease that spreads as a result of contact and transmission between humans and animals.[29] Examples of these diseases in Bolivia include rabies, fascioliasis, hydatidosis, hantavirus, Machupo virus, leptospirosis, and soil-transmitted helminths.[29] The last reported vaccine coverage rate for canine rabies was 86% with 268 reported cases.[29] Fascioliasis is of most concern for the 100,000 people at risk who live around Lake Titicaca and has been prevented and treated through the mass administration of triclabendazole since 2006.[29] There were 22 recorded cases of hantavirus in 2009 with four deaths and a case-fatality rate of 18%.[29] In 2014, the number of recorded cases went up to 34 with a case-fatality rate of 11.5%.[29] Machupo virus causes Bolivian hemorrhagic fever.[29] There were 20 suspected cases of Machupo virus in 2007, with two positive cases dying but no cases reported as recently as 2014.[29]

Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome

In 2014, the estimated prevalence of human immunodeficiency virus (HIV) carriers was 1.5 per 1000 population within an estimated 116 cases of acquired immunodeficiency syndrome (AIDS) per million people in the population.[29] The majority of these cases (96%) have resulted from sexual transmission with a significantly smaller component (3%) occurring through vertical transmission and even fewer cases (1%) resulting from blood transmission.[29] The distribution of cases was 1.7 times higher in men than women.[29] The age of more than half of the affected population falls between 20 and 34 years old.[29]

Non-HIV/AIDS Sexually Transmitted Infections

The most common non-HIV/AIDS sexually transmitted infections in Bolivia are chlamydia, trichomoniasis, syphilis, and gonorrhea.[29] The prevalence of each of these infections

in decreasing order by percentage breakdown is as follows: chlamydia (10.5%), trichomoniasis (4.6%), syphilis (2.6%), and gonorrhea (0.5%).[29]

Tuberculosis

The incidence of tuberculosis (TB) was 70.8 cases per 100,000 population as recently as 2014.[29] However, an encouraging sign is that 84.4% of patients with TB were cured in 2013.[29] The general resistance rate is estimated at 16.2%.[29] In 2015, there were 62 reported cases of multi-drug resistant TB.[29]

Cancer and Non-Communicable Diseases

According to the World Health Organization (WHO), non-communicable diseases affect 59% of the population in Bolivia.[29] In fact, individuals in the 30-70-year-old age group have an estimated 18% probability of dying from them.[29] In 2012, the incidence rate in adults for non-communicable diseases was 185 per 100,000 men and 323 per 100,000 women.[29] The mortality rate from cancer (also known as neoplasms) was 57.4 deaths for men and 89.7 deaths for women per 100,000 people in the population in 2008.[29] The most common type of cancer to afflict men exclusively is prostate cancer.[29] The most common types of cancer to afflict women exclusively are cervical and uterine cancer, followed by breast cancer.[29]

Nutritional Diseases

The rate of chronic malnutrition in children under three years old fell from 41.7% in 1989 to 18.5% in 2012.[29] In 2008, the prevalence of chronic malnutrition in the poorest quintile of the population was 46.0% versus only 6.5% in the least poor quintile.[29] In 2012, 8.5% of children under five years old were overweight or obese as were 49.7% of non-pregnant women of childbearing age.[29] The prevalence of anemia in boys and girls from 6-59 months of age was 60.8% in 2012.[29]

Accidents and Violence

Road injuries caused 16.7 deaths per 100,000 population in 2007.[29] There was an increase in homicides between 2006 and 2010, with 8.7 deaths per 100,000 in the past year.[29] The most frequent forms of violence were child abuse and domestic violence.[29] A staggering statistic is that an estimated 83% of girls, boys, and adolescents suffered violence in their own homes or schools.[29]

COVID-19

Per a report generated by the United Nations Children's Emergency Fund (also known as UNICEF) between March and July 2020, there were 75,234 laboratory-confirmed cases of COVID-19, 73% of which have occurred among children and adolescents.[33] Out of these 75,234 laboratory-confirmed cases, 23,305 cases resulted in complete recovery while 2,894 cases resulted in death, corresponding to a mortality rate of 3.8%.[33] The global pandemic has affected access to safe water hygiene and sanitation, particularly for vulnerable rural and remote populations.[33] An alarming number is that 21% of the population lacks access to safe water.[33]

Positive and Negative Public Health Trends

According to the World Health Organization (WHO), 30% of the Bolivian population (42% of men and 18% of women) smoked tobacco in 2011.[29] The annual per capita consumption of alcohol was 5.9 liters (9.1 liters for men and 2.7 liters for women).[29] Marijuana was one of the most frequently used drugs in the country, consumed by 3.8% of the population in 2010.[29] In 2008, obesity affected 17.9% of the population (9.6% of men and 25.9% of women).[29] In 2008, hypertension affected 24.4% of the population (27.8% of men and 21.2% of women).[29]

The most socially vulnerable groups (those in extreme poverty, the indigenous people, and the rural populations) continue to experience the most avoidable health problems.[29] These

pressing problems include, but are certainly not limited to, chronic malnutrition, maternal and child mortality, communicable diseases related to various environmental problems, and non-communicable chronic diseases.[29] The level of extreme poverty in certain populations in Bolivia produces significant socioeconomic disparities.[29] Fortunately, such extreme poverty has been on the decline, trending down from 37.7% in 2007 to 17.3% in 2014 in general and down from 63.9% in 2007 to 36.1% in 2014 in rural areas.[29]

Bolivia has made incredible strides in human, economic, social, and health development despite persistent issues.[29] This is evidenced by their extraordinary achievement of some of the Millennium Development Goals as outlined by the United Nations (UN).[29] There are eight total Millennium Development Goals, which were agreed upon by all member states of the UN and multiple international organizations.[29] Out of the eight goals, Bolivia has succeeded in making significant progress on at least four of these goals:

- Reduction of extreme poverty and chronic malnutrition[29]
- Expansion of institutional birth coverage to help reduce child mortality[29]
- Reduction of malaria incidence to elimination levels[29]
- Improved maternal health through reduced maternal mortality[29]

The continual challenge for Bolivia as a society and country is to maintain positive trends and ensure sustainable economic and social progress.

B. National Health Care Structure

Health System Structure and Policy

Bolivia's national health care system consists of multiple public and private sector entities.[29] The public sector includes the public subsector and the short-term social security subsector.[29] There are two important entities that manage the public subsector: 1) the Ministry of

Health, which institutes policies at the national level, and 2) the Departmental Health Services, which institutes policies at the departmental level.[29] The public subsector covers the segment of the population that is not insured under any Short-term Compulsory Social Security entities.[29] This includes children under the age of five years old, pregnant women, older adults, persons with disabilities, and women of childbearing age.[29] This service provided coverage of up to 37% of the population in the country as of 2015.[29] The short-term Social Security subsector is comprised of managing entities (i.e., health funds) in charge of granting packages of in-kind services (e.g., maternity and sick benefits), and monetary benefits (e.g., maternity and sick leave, workers compensation, etc.) to subscribed formal workers.[29] This service covered up to 28% of the population in the country as of 2015.[29] Unlike the public sector, the private sector includes for-profit entities and nonprofit ones (like churches and NGOs) that provide health services.[29] This sector also includes the provision of Bolivian traditional medicine services.[29] In recent years, there has been a developing market of private insurers providing health coverage.[29]

Breakdown and Distribution of Health Care Facilities

As of November 2016, there are 3,874 health facilities throughout the entire country of Bolivia.[29] Out of this total number, 3,857 of them provide primary care services of some sort.[29] What follows is the breakdown of those primary care facilities by type of service provided:

- 12 blood banks[29]
- 25 centers with unique characteristics[29]
- 1,067 ambulatory health centers[29]
- 838 centers with inpatient facilities[29]
- 145 comprehensive care centers[29]
- 300 health centers[29]

- 15 polyclinics[29]
- 33 polyclinic practices[29]
- 1,152 health posts[29]

Within the number of health care facilities throughout Bolivia, there are also 221 secondary care hospitals and 66 general and tertiary care hospitals.[29] Since 2015, 2,710 primary care clinics have been deployed throughout the country, which has provided primary care access for 25% of the most vulnerable population.[29] This includes *Mi Salud* (Spanish for "my health") clinics co-managed by the Ministry of Health and each corresponding autonomous municipal government.[29]

How Patient Referral Process Works

Municipal service networks in place have primary care centers and secondary care hospitals in the most populated municipalities.[29,34] Departmental health networks have greater integration and are comprised of different levels with municipal networks and tertiary care establishments.[29,34] Within these networks, each primary care center is connected to more complex referral centers.[29,34] Bolivia has also instituted what is known as a "Referral and Counter-Referral Patient Management System."[34] This system is defined as a "coordination process between the operational units of the three levels of medical care."[34] The primary responsible referral professional is the general practitioner or family medicine physician.[34] A mandatory clinical review is required by a general practitioner or family physician prior to accessing other specialists and hospital services.[34] Nonetheless, in Bolivia, other specialists (such as pediatricians, OB/GYNs, internists, psychiatrists, ophthalmologists, or dermatologists, just to name a few) can be classified as first healthcare level physicians as well.[34]

Health Service Coverage Across the Population

The way health care is administered in Bolivia can be broken down according to the percentage of care provided by various health care provider types, which are simply classified as either governmental, privately owned, or nonprofit in nature.[29] Recent estimates suggest that public spending has accounted for 70.8% of total health care expenditures, which can be further broken down into 44.9% for the public subsector and 25.9% for social security.[29] In terms of the breakdown of facilities operations, 83% of national health care facilities are run by the public sector, 6% by the social security sector, 3% by nongovernmental organizations, and 8% by the private sector.[29]

Quality and Affordability of Care

There is a large range of providers in Bolivia with significant heterogeneity in quality and cost of health services.[35] For example, in 2013, the number of health visits per beneficiary across different social security providers ranged from 1 to 8.1.[35] During this same year, the average cost per outpatient visit ranged from $16 to $47.[35]

Health Care Payment Schemes and Financial Coverage

The types of health providers used by public health insurance schemes are determined by the law and include all public and social security health facilities.[35] Furthermore, municipal governments can contract with preferred private entities or other non-governmental organizations (NGOs) when public or social security providers are insufficient or non-existent.[35] Health care facilities are reimbursed on a fee-for-service package basis for the cost of providing services to the insured population.[35]

Let's summarize the key social security and national public health insurance schemes spanning the years of 2003-2014.[35] Short-term social security (also called Mandatory Social Insurance) is the mandatory insurance for formal sector workers.[35]

Universal Maternal and Infant Health Insurance (also known as ***Seguro Universal Materno Infantil*** or SUMI), which was in place from 2003-2013, was a voluntary government-financed scheme for pregnant women (until six months after childbirth), children under five years old, and women of reproductive age without social security.[35] It was mandated for this insurance coverage to be accepted in all public and social security health facilities as well as some private providers under a signed agreement.[35]

Health Insurance for the Elderly (also known as ***Seguro de Salud para el Adulo Mayor*** or SSPAM) spanned the years of 2006-2013.[35] This was a voluntary government-financed scheme for people 60 years and over.[35] This was accepted by public and social security facilities along with NGOs, churches, and private health facilities based on a signed agreement.[35] Associated with this plan was an annual premium of $65 per person paid to health providers according to the number of beneficiaries they served.[35]

The latest and current healthcare insurance initiative, called the Comprehensive Health Services Benefits Law, has been in place from 2014 to the present day.[35] This is a newer voluntary comprehensive public health insurance covering the same population as the sponsored groups above (SUMI, SSPAM) while also incorporating people with disabilities.[35] For beneficiaries of this plan, services can be sought at public and social security health facilities without any agreement required as well as some private providers under a signed agreement.[35] Each month, municipal governments reimburse health providers on a fee-for-service package basis for the cost of each service package provided to the beneficiaries of this plan.[35]

Additional Government Programs to Increase Access to Care

The Bolivian government has spearheaded several initiatives intended to increase availability, affordability, efficiency, and overall access to care, particularly for marginalized and disenfranchised communities.[29] The Unified Intercultural Community and Family Health System was a plan set up to eliminate social exclusion in health, increase societal participation in health management, bring services closer to individuals, families, and communities, boost traditional medicine services, and reduce the impact that segmentation and fragmentation have on universal access (particularly for those people who lack insurance coverage).[29] The Zero Malnutrition Multisectoral Program involves an intersectional partnership with the ministries of social services and the economy to operate in the municipalities most vulnerable to food insecurity and risk of malnutrition in children under five years old.[29] The ***Bono Juana Azurduy*** program benefits pregnant women and children under two years old.[29] The purpose of the ***Mi Salud*** project established by the Ministry of Health is to strengthen primary care across the country.[29] As of the latest numbers, this program has a physical presence in 307 of 339 municipalities and 25 indigenous communities in the country.[29]

Health Care Expenditure

The per capita costs for health care in Bolivia are estimated to amount to $206 per inhabitant.[29] Health care expenditure as a percentage of GDP is 6.7%.[29] Out-of-pocket expenses on privately provided care have been steadily decreasing over time.[36] The percentage of such expenditures decreased from 33.28% in 2010 to 25.08% in 2017, which was down from 28.02% in the previous year.[36] This is comparatively low when considering the Latin American country with the highest share of health expenditure coming from private payments, which would be Venezuela at nearly 63%.[29]

Health Workforce and Infrastructure

As of 2016, the total number of hospital beds in Bolivia is 13,785.[37] As of 2014, there are an estimated 1.1 hospital bed units per 1000 people in the population.[38] Santa Cruz is the top region by the total number of hospital beds with 4,093, accounting for 29.69% of the hospital beds across the entire country.[37] Santa Cruz plus the other four regions (La Paz, Cochabamba, Chuquisaca, and Tarija) in the top five together account for 87.34% of total hospital beds in Bolivia.[37] As one might imagine, this makes sense as the majority of the hospital capacity for the country is concentrated in the most populous regions. Nonetheless, there is also, understandably, concern about these numbers as they speak to a disparity in care and resources for those regions outside of the top five.

In terms of the health care workforce analysis, the number of nurses serving the country is 4,254 nurses total, equating to four nurses per 10,000 people in the population.[29] There is an even drastically lower number of midwives, 490 in all.[29] The number of physicians is 8,676 total, which equates to eight per 10,000 people in the population, or roughly doubles the number of nurses.[29] This figure of physicians includes both generalists and specialists.[29] Out of this total number, approximately 56% of physicians worked in primary care.[29] Prior to 2014, the distribution of doctors in the public sectors used to be 77% in urban areas and 23% in rural areas.[29] Now, with newer health service programs in place (such as *Mi Salud*, *Bono Juana Azurduy*, and ASSO medical residency programs), 65% of physicians are in urban areas and 35% are in rural areas.[29]

Regarding the overall health care workforce, there are roughly 12 health care professionals per 10,000 members of the population at the national level.[29] These health care professionals are split evenly between urban and rural areas.[29] The breakdown is as follows:

- 8% specialized physicians[29]
- 16% general practitioners[29]
- 4% registered nurses[29]
- 8% other health professionals[29]
- 24% nursing assistants[29]
- 13% service personnel[29]
- 10% administrative personnel[29]
- 17% other personnel[29]

Additionally, there are 4,456 traditional practitioners registered.[29] Out of this total number of registered traditional practitioners, traditional naturopaths, make up 1,433 of them while traditional doctors make up 2,535 of them.[29]

Specific information available on training programs for health care practitioners is minimal. However, as of 2011, there are 81 university degree programs in health sciences in medicine, dentistry, and nursing.[29] Based on the numbers provided above, there is a need to invest in developing the health care workforce, mainly to avoid reproducing or exacerbating disparities in access to care for the most vulnerable in Bolivia. In anticipation of such a need for more health care providers, it is safe to assume that either more programs have been put in place since 2011 or there are plans to do so after recognizing this need. Regardless, this topic merits further attention in the future, especially when considering plans to get involved in any global health partnership in Bolivia.

NATIONAL RADIOLOGY PROFILE

A. Radiology Workforce

There is very limited data and information available on the composition of the radiology workforce in Bolivia. According to the World Health Organization (WHO), as of the year 2020, there are 13.4 medical physicists per every 10,000 cancer patients, 111.3 radiologists per every 10,000 cancer patients, and 8.7 nuclear medicine physicians per every 10,000 cancer patients.[39-41] To provide further context, there were 14,915 total documented cancer cases across Bolivia in 2018.[39] In addition to all of this, it is reported that there are 45 biomedical engineers in Bolivia as recently as 2017 and 11 radiation oncologists as recently as 2013.[40,41]

B. Training and Professional Representation

Academic Programs

Similar to the radiology workforce data, there is very limited information on the number and types of academic programs available.[41-44] There is no readily available information on the training requirements to become a radiologist or radiologic technologist. ***La Universidad Cristina de Bolivia*** (UCEBOL) offers radiology technologist training that requires three years to complete.[42] ***La Universidad Mayor de San Andres*** offers technologist training that requires three years to complete.[43] Institutions offering biomedical engineering training include ***la Universidad Catolica Boliviana San Pablo*** and ***la Universidad del Valle***.[41] ***La Universidad Mayor Real y Pontificia San Francisco Xavier de Chuquisaca*** offers a five year bachelor's degree in bio-imaging.[44]

C. Professional Radiology Societies

La Sociedad Boliviana de Radiologia (which translates to "the Bolivian Radiologic Society" in English, also known as SBR for short) was founded on June 20, 1957 in La Paz.[45] The organization puts on a ***Congreso Boliviano de Radiologia*** (or "Bolivian Radiologic Conference" in English), a scientific meeting that takes place annually in La Paz.[45] The organization publishes a magazine called ***Diagnostico por Imagenes*** (which roughly translates to "Imaging Diagnosis").[45] Through the organization, a diagnostic imaging course, in conjunction with the ***Colegio Medico de Bolivia*** (which roughly translates to "the Bolivian Medical Association") and the **Colegio Medico Departamental de La Paz** (which translates to "the Medical Association of the Department of La Paz"), is offered as well.[45] As of the time of this writing, there are 69 total members listed on the organization's website, which is http://sociedadbolivianaderadiologia.org/sbr/.[45] The current president is Dr. Jorge Chungara (jorgechungaram@gmail.com).[45] The email for the organization is info@sociedadbolivianaderadiologia.org.[45] Their address is Ballivan 1266, La Paz, Bolivia and their telephone number is (5912) 374543.[45]

The SBR collaborates with ***el Colegio Interamericano de Radiologia*** (which translates to "the Inter-American College of Radiology", also known as CIR for short) and ***la Sociedad Española de Radiologia Medica*** (which translates to "the Spanish Society of Medical Radiology", also known as SERAM for short).[46-47] The mission of CIR is to unite Ibero-American national radiology groups (affiliated with the leading radiology societies in North America, Latin and South America, and Spain).[46] This organization was founded in 1943 in Buenos Aires, Argentina, and it is sponsored by important stakeholders in the world of radiology, such as GE Healthcare, Hologic, RSNA, and Guerbet.[46] The organization publishes a

newsletter called NotiCIR as well as ***la Revista Virtual de Radiologia*** (which is the CIR Virtual Journal of Radiology).[46] The organization also produces a textbook series called "Advances in Image Diagnosis" on several radiology subspecialty topics.[46] Like the SBR, CIR has an annual scientific meeting known as ***el Congreso Interamericano de Radiologia,*** with plans for the most recent meeting to take place from December 9-12, 2020, in Mexico.[45-46] The current president of CIR is Dr. Henrique Carrete Junior (from Brazil), and the president-elect is Dra. Beatriz Gonzalez (from Mexico).[46] The organization's website is https://www.webcir.org/index.php, and their email is cir.admin@servimed.com.mx.[46] Their address is Barranca del Muerto 520, Col. Alpes, Alvaro Obregon Delegation, Mexico City, Mexico. CP 01010 and their telephone number is +52.55.91719575.[46] SERAM is based in Madrid, Spain.[47] SERAM is a global partner of the American Roentgen Ray Society (ARRS) and, because of this, one can apply for free SERAM International Membership as an ARRS member.[47]

D. Equipment Inventory and Distribution

It is difficult to obtain data regarding the number and types of devices available for radiologic imaging services throughout Bolivia. The breakdown of the most readily available numbers for each type of imaging device for the country is as follows:

- 68 computed tomography scanners (CTs)[48]
- 87 C-arms[48]
- 11 magnetic resonance imaging machines (MRIs)[48]
- 36 mammography units[48]
- One gamma camera and one linear accelerator (nuclear medicine)[48]
- 20 PACS systems in place[48]

- 219 ultrasound units[48]
- 220 x-ray units[48]

To elaborate further on the use of MRI, a mobile MRI machine has been implemented in Bolivia based on ***Hospital Holandes*** (in El Alto) and ***Hospital Arco Iris*** (in La Paz) sponsored by Resonandina and Lamboo Mobile Medical.[49-50] This program was started at *Hospital Holandes* in 2016 and was the first mobile MRI machine in the country (and the second fully operational MRI in La Paz).[49-50] This specific machine cost $1.5 million and has helped serve more than 250 patients per week.[50] The specific model of this MRI machine is a Siemens MAGNETOM Essenza 1.5T.[50] ***Hospital Regional San Juan de Dios*** in Tarija has the most modern MRI machine in Bolivia.[51] *Hospital Arco Iris*, which is considered the premier hospital in La Paz, is the only facility in the city that has two state-of-the-art MRIs, one of which is a semi-mobile device.[52]

Nuclear medicine is a relatively new type of imaging offered in Bolivia. There is a training course in nuclear medicine organized by the National Institute of Nuclear Medicine (INAMEN), the Bolivian Institute of Nuclear Medicine and Technology (IBTEN), the International Atomic Energy Agency (IAEA), and the departmental government of La Paz to cover topics about the use of nuclear medicine in different medical specialties.[53] A press release in September 2019 announced the inauguration of the first Institute of Nuclear Medicine and Cancer Treatment located in El Alto.[54] The equipment in this facility is expected to include linear accelerators and two tomography machines, one for PET/CT and another for SPECT/CT.[54] The Bolivian Nuclear Energy Agency (ABEN) and the Argentine state company INVAP signed a contract in 2018 to build three nuclear medicine institutes in Bolivia.[55] An alumnus of the Boston University School of Public Health (who works for ABEN) is helping to spearhead a $150

million initiative to provide radiotherapy to these three nuclear medicine institutes.[56] The eventual plan for Bolivia is to install six linear accelerators, nine tomography machines, and a radiotherapy area with brachytherapy capabilities.[55] Upon the last check, two other nuclear medicine institutes were to be inaugurated in early 2020: one in Santa Cruz and the other in southern La Paz.[54]

As far as mammography goes, breast imaging services are at least offered through the ***centros de salud*** run by the government, which are affiliated with the ***Centro de Investigacion, Educacion y Servicios*** (known as CIES for short).[57]

The Bolivian Nuclear Energy Agency (ABEN) and the Argentine state company INVAP signed a contract in 2018 to build three nuclear medicine institutes in Bolivia.[55] There is an ultimate plan in place for the installation of a total of 6 linear accelerators, 9 tomographs, and a radiotherapy area with brachytherapy capabilities.[55]

E. Regulation and Policy

The Bolivian national authority that regulates pharmaceuticals, medical devices, and medical imaging equipment is known as ***la Agencia Estatal de Medicamentos y Tecnologia en Salud*** (also known as AGEMED for short, formerly known as UNIMED), which is a service offered through the ***Ministerio de Salud*** (National Health Ministry).[58]

The website for AGEMED is https://www.agemed.gob.bo/, and their contact person is Mery Wilma Teran Carreon, whose title is ***Responsable de Politicas Farmceuticas y Observatorio Farmaceutico***.[59] Her email address is wilteranc@yahoo.es and her telephone number is (+591) 22444807.[59] ***La Agencia Estatal de Medicamentos y Tecnologia en Salud***, which is a subsidiary

of the Bolivian Ministry of Health, is the agency responsible for handling procurement and receipt of medical device donations.[58]

Regarding radiation protection for patients and personnel, the national authority responsible for this is called ***el Instituto Boliviano de Ciencia y Technologia Nuclear*** (also known as IBTEN).[60] IBTEN performs regular inspections of facilities equipped with medical imaging equipment and requires a radiation safety officer in institutions with more than three fixed imaging devices.[61] This organization works in conjunction with the International Atomic Energy Agency (IAEA) and the Radiation Sources Regulatory Partnership (RSRP).[61-62] RSRP is an international assistance program that provides technical information and training to other countries to help them develop their nuclear and radiation safety regulatory infrastructure.[61-62] For example, RSRP has put on a workshop in La Paz, Bolivia in the past called "Design and Shielding Calculation in Medical Radiological Facilities in La Paz, Bolivia."[61-62] RSRP is a subsidiary of the U.S. Nuclear Regulatory Commission.[62]

F. Funding

Unfortunately, there is no readily available information regarding government-funded radiology initiatives or international humanitarian involvement to build up the local radiology infrastructure in Bolivia. Nonetheless, the hope is that this will change dramatically in the years to come as efforts towards globalization and cross-cultural collaboration continue to become more of the norm throughout the field of radiology. So until then…stay tuned!

CONCLUSION

The primary aim of this research report was to provide a comprehensive overview and evaluation of the current radiology landscape in Bolivia. This evaluation was necessary to consider other geographical, historical, cultural, political, infrastructural, and healthcare-related contextual factors. In so doing, the hope is that the readership for this report, particularly individuals and organizations who are pursuing opportunities for global health engagement and are unfamiliar with the Radiology Readiness Assessment tool developed by the RAD-AID organization, will recognize the essential task of performing an exhaustive review of the infrastructure and resource availability in any low-to-middle income country (LMIC) prior to developing a radiology strategy there.[63] Otherwise, the biggest concern is that premature implementation of a radiology strategy without effective planning beforehand could result in a waste of human and imaging resources, particularly advanced imaging equipment.[63]

As much as this report attempted to cover every aspect of the radiology readiness process, there are certainly some limitations here. First of all, there is very limited information available on the Internet at the time of this writing about various components of the "national health care sector" and "national radiology profile" sections of this report, specifically the overall health care workforce and infrastructure, the radiology workforce, professional training, equipment inventory and distribution, radiology regulation and policy, and funding for radiology services. While this dearth of information was not unexpected, part of the goal of this report is to stimulate further discussion and investigation so that this situation can be improved in the future. Education through the continued growth of the medical literature and exchange of ideas and experiences is one important way to achieve the ultimate goal of reducing the worldwide disparity in access to healthcare – and, in particular, radiology services – between LMICs and

higher-income countries. Secondly, there are many broad cultural generalizations included in this report that must be taken with a grain of salt because they do not apply to every person or situation. Thirdly, because this report is a comprehensive and general overview, it cannot possibly serve the specific needs of every global health partnership or project. Therefore, additional research, including directly contacting and communicating with in-country experts/professionals of interest, may be required to acquire more detailed information on any component of this report pertaining to the specific needs of any global health project.

For anyone interested, key opportunities and future directions include: a) getting involved with RAD-AID and collaborating with other relevant non-governmental organizations, b) working with the national government and radiology professional organizations in Bolivia for additional education and administrative support, c) creating a continuously updated database on radiology equipment and distribution throughout Bolivia, and d) uncovering potential sources of international aid and funding for radiology-related initiatives. Targets for interventions for larger organizations might include: a) developing more programs for radiology training to increase the workforce (e.g., nurses, technologists, and medical physicists), b) supporting existing efforts to expand highly capital-intensive radiology services (e.g., nuclear medicine and MRI), c) nationalizing government-supported minimum safety and quality standards for heavily regulated radiology services (e.g., CT and mammography), and d) establishing radiology-based screening programs (e.g., lung and breast cancer) in conjunction with public health campaigns to spread awareness to involved providers and at-risk patients. The expectation is that this report will be outdated in months or years and will need updating by others, especially as more organizations get involved in Bolivia and information/data becomes publicly available. At the very least, the hope is that this country report can serve as a foundational reference for others to use and build

upon, as well as a helpful “how-to” starting point for anyone looking to design and implement a radiology program in Bolivia or elsewhere for that matter.

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