



# Managementsamenvatting

Dit rapport is het product van een gap-analyse van verschillende aspecten van wat we weten over de Arubaanse arbeidsmarkt, met als doel uitdagingen te identificeren en verbeteringen voor te stellen voor een efficiëntere en flexibelere aansluiting tussen onderwijs en arbeidsmarkt. De nadruk ligt op het verbeteren van de toegankelijkheid van informatie, het ondersteunen van de ontwikkeling van een effectief arbeidsmarktbeleid, het bevorderen van betere communicatie tussen belanghebbenden en het ondersteunen van de afstemming tussen onderwijsbeleid en de arbeidsmarkt.

De eerste focus van dit onderzoek is de toegankelijkheid en duidelijkheid van informatie en gegevens met betrekking tot de vraag naar arbeid en de beschikbaarheid van banen. De autoriteiten vinden het vaak een uitdaging om toegang te krijgen tot duidelijke en uitgebreide informatie als basis voor beleidsontwikkeling, die inzicht geeft in de afstemming tussen beschikbare banen en de vraag naar arbeid. Dit waargenomen gebrek aan transparantie en beschikbaarheid van gegevens maakt het moeilijk voor individuen en organisaties om weloverwogen beslissingen te nemen over zaken die verband houden met de beroepsbevolking, en maakt het ook moeilijk voor autoriteiten om effectief beleid te ontwikkelen. Het verbeteren van de toegankelijkheid en transparantie van arbeidsmarktinformatie is essentieel voor een betere afstemming van banen en capaciteitsplanning.

Een ander belangrijk vraagstuk dat onder de aandacht wordt gebracht is de toegankelijkheid van de arbeidsmarkt voor diverse doelgroepen. Deze groepen zijn de werkzoekenden, individuen die van carrière willen veranderen, de economisch inactieve bevolking en jongeren tot 25 jaar oud. Voor deze groepen zijn er uitdagingen op de arbeidsmarkt, waardoor velen onvoldoende kansen of ondersteuning krijgen. Bovendien begrijpen overheidsdiensten vaak niet volledig de behoeften van werkgevers en de vereiste kwalificaties van potentiële kandidaten, wat leidt tot inefficiëntie en gemiste kansen. Gerichte inspanningen zijn nodig om ervoor te zorgen dat iedereen gelijke toegang heeft tot de arbeidsmarkt en dat overheidsdiensten en onderwijsmogelijkheden beter aansluiten bij de behoeften van de arbeidsmarkt.

Het onderzoek benadrukt ook de mogelijkheden voor een gericht arbeidsmarktbeleid en geïnformeerde wetgeving. Het ontbreken van een alomvattend en goed gedefinieerd arbeidsmarktbeleid vormt een uitdaging om zowel de huidige als de toekomstige behoeften van

de arbeidsmarkt te begrijpen en aan te pakken. Deze studie benadrukt het belang van een diepgaande analyse van bestaande projecties, trends en beleid om lacunes en mogelijkheden voor verbetering te identificeren. Door deze lacunes aan te pakken en de wetgeving te actualiseren kunnen overheden een beter inzicht krijgen in trends en toekomstige ontwikkelingen op de arbeidsmarkt, waardoor het beleid beter kan inspelen op veranderende economische omstandigheden. Deze proactieve aanpak zal helpen een duurzamere arbeidsmarkt te creëren die tegemoetkomt aan de behoeften van de gemeenschap en de werkgevers.

Bovendien zijn effectieve communicatie en samenwerking tussen overheid, werkgevers, werkzoekenden en onderwijsinstellingen cruciaal voor een goed functionerende arbeidsmarkt. Uit het onderzoek blijkt echter dat er uitdagingen zijn op het gebied van afstemming die deze interacties vaak belemmeren. Het gebrek aan samenwerking en afstemming tussen overheidsinstanties, zoals Directie Arbeid, lokale werkgevers, vakbonden, scholen, opleidingsinstituten en universiteiten schept barrières voor een effectieve dialoog en samenwerking. De studie verkent mogelijkheden om een duidelijkere agenda op te stellen voor een veerkrachtiger arbeidsmarkt. Daarnaast benadrukt het onderzoek het belang van het verbinden van uitdagingen op de arbeidsmarkt met de onderwijssector en andere lokale belanghebbenden om uiteindelijk werkzoekenden beter te ondersteunen.

De inzichten en analyses uit dit onderzoek zullen bijdragen aan het Ministerieel 4-Landen Overleg (M4LO), gepland voor november 2024. Dit onderzoek belicht de toegankelijkheid van informatie, inclusiviteit van de arbeidsmarkt, beleidsvorming en communicatie met belanghebbenden, en draagt bij aan dialoog en beleidsontwikkeling. Het doel is om de vormgeving van een arbeidsmarkt te ondersteunen die transparant en inclusief is, inspeelt op de behoeften van alle belanghebbenden, en uiteindelijk de economische groei en het maatschappelijk welzijn bevordert. In deze eerste fase van dit project richten we ons op het beantwoorden van de volgende onderzoeksvraag:

*Welke lacunes komen naar voren uit de voorlopige analyse van bestaande arbeidsmarktgegevens van Aruba, en welke aanbevelingen kunnen worden gedaan voor verder onderzoek om deze lacunes in te vullen in afstemming met onderwijs en beleid?*

Dit onderzoek bouwt verder op publieke data om voorlopige inzichten te verkrijgen in de ontwikkelingen en projecties van de Arubaanse arbeidsmarkt voor de komende drie jaar. Hierbij valt te denken aan het analyseren van de omvang en samenstelling van de arbeidsmarkt, de arbeidsmobiliteit en de aansluiting tussen onderwijs en arbeidsmarkt. Het rapport zal ook bestaande gerelateerde onderzoeksrapporten en strategische plannen belichten. De

bevindingen van de overkoepelende analyse van de arbeidsmarkt hebben tot doel de onderwijsinfrastructuur te versterken en een regionaal opleidingsaanbod te ontwikkelen.

Hoofdstuk 1 geeft een inleiding tot de Arubaanse arbeidsmarkt, inclusief het onderwijssysteem en de bestaande structuren. Hoofdstuk 2 presenteert de methode die werd gebruikt om het rapport te ontwikkelen, hoofdstuk 3 presenteert verschillende projecties voor de ontwikkeling van de bevolking, waaronder modellen ontwikkeld door de onderzoekers van de Universiteit van Aruba (UA), hoofdstuk 4 introduceert de bestaande inzichten in de Arubaanse arbeidsmarkt. In hoofdstuk 5 presenteert een analyse van aandachtspunten op basis van literatuuronderzoek, en hoofdstuk 6 bespreekt de belangrijkste bevindingen, samen met een schets van de noden voor onderzoek.

## Executive Summary

This report presents the findings of a gap analysis of several critical aspects of the Aruban labor market, aiming to identify challenges and suggest improvements for a more efficient and adaptive labor market. The focus is on enhancing information accessibility, supporting the development of effective labor market policies, fostering better data sharing practices among the key stakeholders within the system, and highlighting the alignment between education and the labor market as a direction for further research and development.

The main area examined is the accessibility and clarity of information and data related to labor demand and job availability. Relevant authorities often find it challenging to access clear and comprehensive information as a basis for policy development that provides insight into the alignment between available jobs and labor demand. This perceived lack of transparency and data availability makes it difficult for individuals and organizations to make informed decisions about matters relating to the labor force and for authorities to develop effective policies. Improving the accessibility and transparency of labor market information is essential for better job matching and capacity planning.

Another important issue highlighted is the accessibility of the labor market for various target groups. These groups include job seekers, individuals looking to switch careers, the economically inactive population, and young people up to 25 years old. Currently, the labor market does not adequately cater to these diverse groups, leaving many without sufficient opportunities or support. Additionally, government services often do not fully understand employers' needs and the required qualifications of potential candidates, leading to inefficiencies and missed opportunities. Addressing these issues requires targeted efforts to ensure that everyone has equitable access to the labor market and that government services and educational opportunities are more aligned with the needs of the labor market.

The research also highlights the possibilities for more targeted labor market policy and informed legislation. The absence of comprehensive and well-defined labor market policies makes it challenging to understand and address both current and future labor market needs. This study emphasizes the importance of analyzing existing projections, trends and policies to identify gaps and areas for improvement. By targeting these gaps and updating legislation, governments can gain better insights into labor market trends and future developments, making policies more responsive to changing economic conditions. This proactive approach will help create a more sustainable labor market that meets the needs of the community and the employers.

Moreover, effective communication and collaboration between the government, employers, job seekers and educational bodies are crucial for a well-functioning labor market. However, the research identifies that challenges in alignment often hinder these interactions.

The lack of collaboration and understanding between government entities, such as the Directorate of Labor, local employers, unions, schools, training colleges and Universities creates barriers to effective dialogue and cooperation. The study explores ways to establish a clearer agenda as to what makes for a more resilient labor market. Additionally, it highlights the importance of linking labor market challenges with the educational sector and other local stakeholders to better support job seekers.

The insights and analyses from this research will contribute to the Kingdom's 4-country Ministerial Consultation (M4LO) scheduled for November 2024. By addressing the key issues of information accessibility, labor market inclusivity, policy formulation, and stakeholder communication, this research will support informed discussions and policy development. The overall objective is to support the creation of a labor market that is transparent, inclusive, and responsive to the needs of all stakeholders, ultimately promoting economic growth and social well-being. For the first phase of this project, we focus on answering the following research question:

*What gaps are revealed by the preliminary analysis of existing labor market data from Aruba, and what recommendations can be made for further research to address these gaps in alignment with Education and policy?*

This research delivers a Phase 1 report building on data from relevant authorities to gain preliminary insights into the developments and projections for the next three years in various fields and the occupancy rate in Aruba. This includes analyzing the size and composition of the labor market, labor mobility, and the connection between education and the labor market. The report will also highlight existing related research reports and strategic plans. The findings from the overall labor market analysis project aim to strengthen the educational infrastructure and develop a regional training offer.

Chapter 1 provides the introduction to the Aruban labor market including the education system and structures. Chapter 2 presents the method that was used to develop the report. Chapter 3 presents different population projection models including those developed by the researchers at the University of Aruba (UA). Chapter 4 introduces current insights in the Aruban labor market and the results of a recent labor shortage survey, Chapter 5 highlights the emerging themes from the literature review, and Chapter 6 discusses the main findings and outlines future research needs.

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# Chapter 1. Background

Aruba, a Caribbean island situated in the southern part of the region, is a constituent country of the Kingdom of the Netherlands. Located just 29 kilometers (18 miles) north of the coast of Venezuela, Aruba is renowned for its beaches, mixed culture, and stable climate. The island's total land area is approximately 180 square kilometers (69 square miles), making it a relatively small but significant location due to its strategic position and economic stability. Aruba's capital, Oranjestad, is a bustling port city that serves as the administrative and commercial hub of the island.

Aruba's political history is closely tied to the broader history of the Caribbean and its colonial past. A significant milestone in Aruba's political history occurred on January 1, 1986, when it separated from the Netherlands Antilles, a group of Caribbean islands also under Dutch control. This move, known as "Status Aparte," granted Aruba autonomy within the Kingdom of the Netherlands, allowing it to have its own government and control over internal affairs while the Dutch government remained responsible for defense and foreign affairs.

Aruba's labor market is diverse and dynamic, shaped significantly by its tourism-driven economy. The tourism industry is the largest employer on the island, with a substantial portion of the workforce engaged in the hospitality, service, and retail sectors. Hotels, restaurants, and entertainment venues form the backbone of this industry, attracting millions of visitors annually, predominantly from North America and Europe.

Aside from tourism, other critical sectors include finance, construction, and the government is also actively promoting diversification through investments in information technology, agriculture and green energy initiatives, aiming to reduce reliance on tourism and create more varied employment opportunities. The labor market is regulated by laws that ensure worker protections, fair wages, and working conditions. Aruba has a relatively high standard of living, with labor rights enshrined in national legislation. The labor force participation rate is relatively high, with a significant emphasis on both skilled and unskilled labor to meet the needs of the various industries.

## The Education System

Aruba's education system is structured to provide comprehensive and quality education to its residents, emphasizing accessibility and progression through various educational tiers. The system is modeled after the Dutch educational framework and comprises primary, secondary, and tertiary levels. Education is mandatory for children from 4 to 16 years old.

Primary education in Aruba caters to children aged 4 to 12. This stage focuses on basic literacy, numeracy, social skills, and general knowledge. The curriculum includes subjects such as Dutch, Papiamentu (the local language), English, mathematics, science, social studies, and physical education. Primary education aims to lay a strong foundation for further learning and personal development.

Secondary education caters to students aged 12 to 18 and is divided into several tracks based on academic ability and vocational interests. The main types of secondary education include:

- EPB (Educacion Profesional Basico): Offers lower vocational education, aimed at the labor market and at continued studies at secondary vocational education level.
- MAVO (Middle-level General Secondary Education): This track prepares students for vocational education or higher general secondary education.
- HAVO (Higher General Secondary Education): Aimed at preparing students for tertiary education, particularly in higher vocational education and universities of applied sciences.
- VWO (Pre-University Education): This track is designed for students aiming to enter university. It provides a rigorous academic curriculum to ensure readiness for higher education.

Aruba offers various tertiary education options, including vocational training, professional courses, and university education. The main institutions include the Educacion Profesional Intermedio (EPI), which provides education at secondary vocational education level, the Instituto Pedagogico Arubano (IPA), which provides teacher training, and the University of Aruba, which offers bachelor's and master's degrees in fields such as law, economics, hospitality management and sustainability for engineering. Additionally, there are other institutions that provide specialized training in such as tourism, healthcare, and technical fields.

Overall, Aruba's education system is geared towards fostering a knowledgeable and skilled workforce capable of contributing to the island's socio-economic development. The emphasis on multilingual education, particularly in Dutch, English, and Papiamentu, ensures that graduates are prepared for both local and international opportunities.

In summary, Aruba is a vibrant and dynamic island nation with a rich history, diverse geography, robust labor market, and a well-structured education system. Its political autonomy within the Kingdom of the Netherlands, combined with its strategic location and economic resilience, positions Aruba as a unique and thriving entity in the Caribbean region. The island continues to evolve, aiming for sustainable growth and development in the years to come. In order to achieve this, alignment of the labor market, education system and government policies are crucial.

## Chapter 2. Methodology

To answer the research question, a mixed methods approach was used. For the review of the existing literature including existing labor market research reports by local agencies and government agencies, desk research, including a close reading of relevant policy documents, was performed by student assistants at the University of Aruba and this was followed by the development of projections and a gap analysis by the assigned researchers at the University of Aruba. For the projections, statistical analysis was conducted using regression analysis to fit the available data to predict the observed changes within the population.

The first phase of the research involved an extensive review of the existing literature. This included an examination of labor market research reports produced by various local and government agencies. To facilitate this process, a team of student assistants from the University of Aruba was enlisted. These students conducted detailed desk research, meticulously gathering and organizing relevant documents, reports, and studies. Their efforts were crucial in compiling a comprehensive pool of existing knowledge on the labor market in Aruba.

Following the desk research and close reading of the policy documents, the collected data formed the basis for the development of projections and the gap analysis by the assigned researchers at the University of Aruba. The researchers identified key themes, trends, and insights related to the labor market. The researchers looked for recurring patterns and significant findings that could shed light on the current state and future projections of the labor market in Aruba. This qualitative analysis helped in understanding the contextual and qualitative aspects of the labor market, such as employment trends, sectoral shifts, and policy impacts.

For the quantitative component of the research, a statistical analysis was conducted, focusing specifically on making projections about the population. This involved the use of regression analysis, a powerful statistical method used to examine the relationship between variables and to predict future trends based on historical data. The researchers employed regression models to analyze the available data, fitting the data to these models to predict changes in the labor market over the next three years. This quantitative analysis aimed to better understand the labor market indicators such as employment rates, labor force participation, and sectoral employment shifts.

Regression analysis was chosen for its ability to handle multiple variables and to provide insights into the relationships between different labor market factors. By fitting the data to the model, the researchers could make informed predictions about future trends, considering various influencing factors. This approach allowed for a more dynamic understanding of how different variables interact and influence the labor demand and supply over time.

The integration of qualitative and quantitative methods provided a comprehensive view of the labor market in Aruba, but also brought to light a number of contradictions, unclarities and gaps.

The qualitative analysis offered in-depth insights into aspects such as policy impacts and sectoral trends, while the regression analysis provided concrete, data-driven projections of future labor market conditions. This mixed methods approach ensured that the research was not only thorough and detailed but also grounded in both empirical data and contextual understanding.

The findings from this methodology are intended to be instrumental in shaping future labor market policies and educational strategies in Aruba. By understanding the current state of the labor market and making informed projections about future trends, policymakers and educational institutions can better align their strategies to meet the evolving needs of the workforce. The insights gained from this research can help in identifying critical areas for intervention, such as sectors with high growth potential or those facing significant challenges.

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## Chapter 3. Population Projections on Aruba

In this chapter, we present and analyze two population projection models; one existing 2010 Central Bureau of Statistics model (CBS Aruba/Eelens, 2010) and an expanded model created by the University of Aruba that builds on the existing one. The approach taken was a comparative analysis of simulated model projections against actual data with the objective to calibrate the model parameters to achieve a better fit to the observed population counts.

Population growth is influenced by two main factors: natural growth and net migration. Natural growth is the difference between the number of births and deaths, while net migration is the difference between the number of people immigrating to and emigrating from a region. In the case of Aruba, the relatively low number of births and deaths means that the population growth is largely determined by net migration.

Throughout its history, Aruba has experienced periods of both population decline and growth, often in response to economic conditions. During times of economic hardship, the population has tended to decline, only to rebound during more prosperous times. A significant period of sustained population growth occurred between 1988 and 2016, during which the population nearly doubled. This dramatic increase was largely fueled by the booming industries and an influx of immigrants seeking better opportunities in Aruba. However, this trend of continuous growth saw a notable interruption in 2017 when the population declined for the first time in nearly three decades. This marked a significant departure from the previous trend of consistent growth. The decline in 2017 can be attributed to a combination of factors, including economic challenges that may have reduced the attractiveness of Aruba as a destination for immigrants, as well as natural demographic shifts.

The onset of the COVID-19 pandemic brought further challenges to Aruba's population dynamics. Between 2020 and 2022, the island reported another period of population decline. The pandemic had a profound impact on global migration patterns, with many countries imposing travel restrictions and economic uncertainties leading to fewer people moving abroad. In Aruba, the decline in population during these years was also due to a decrease in the number of births and a significant reduction in the number of people migrating to the island. The pandemic's economic impact also likely played a role in this decline, as people were less likely to move during uncertain times. As a result, at the end of 2023, the population of Aruba stood at a reported 107,566 individuals. This represented a 0.6% decrease compared to the figures from the 2020 Population and Housing Census.

When it comes to the study of population growth and relevant to this study, it is also important to consider the movement of undocumented persons. In the 2021 report "Governing from the future - Leading with Impact", the Central Bank of Aruba reported and confirmed by the UNHCR, approximately 17,000 undocumented Venezuelans reside in Aruba. This number

represents 15.5 percent of Aruba's population, or about 1 in 6 people. There is no data available on the number of undocumented individuals from other countries in Aruba. Most of these undocumented persons need to work to survive and require housing, which affects both the labor and housing markets. When considering the undocumented, Aruba appears much more populated as compared to counting only the official number of residents. UNHCR has reported Aruba to be the first country in the world with the largest number of refugees and other people in need of international protection compared to their local populations. This creates an even more urgent situation since in order to survive, this subset of the population also requires the use of infrastructures and services. This increased consumption impacts the prices and availability of goods and services on our island as well as the dynamics of the labor market.

In the following sections we delve into each projection model, discussing their methodologies, parameters, and implications for labor market analysis. Through this analysis, we aim to highlight the different approaches, including their benefits and disadvantages, that can be taken when modeling the growth of the Aruba population and their impact on understanding labor market dynamics.

## The CBS (Aruba) Population Projection Model

In 2010 CBS published “Populations Projections Aruba 2010-2030” a population projection model primarily focused on the relationships between GDP and the demand/supply of the island’s labor force, incorporating parameters that describe emigration/migration rates and demographic factors. This model provided a detailed understanding of how economic factors influenced population dynamics using three scenarios: low scenario, high scenario and medium scenario each with a different parameter combination to represent a separate economic outlook. For example, the low scenario is based on a slower growing economy, combined with the assumption of a minimum increase in the labor productivity and lower unemployment rate, which results in a negative growth of the population. In 2014, “Populations Projections Aruba 2010-2030, The 2014 revision” was released where the model set GDP to AWG 3,105 million, assumes zero labor productivity growth, and adjusts labor force per 2010 Census. These projections are presented in Figure 1.

In 2023, CBS released updated population projection figures, which present more conservative values compared to the 2010 model. The changes in the methodology employed in this updated model will be disclosed by CBS in the months after publication of this report, and will be addressed in future publications. Preliminary discussions with CBS have indicated that the primary difference between the 2010 and 2023 models lies in not using GDP as a main parameter for determining labor demand. CBS Aruba developed this new model to act as a baseline whereby if special events are expected, for example the development of a particular sector, new parameters would be set to indicate the expected net migration expected.

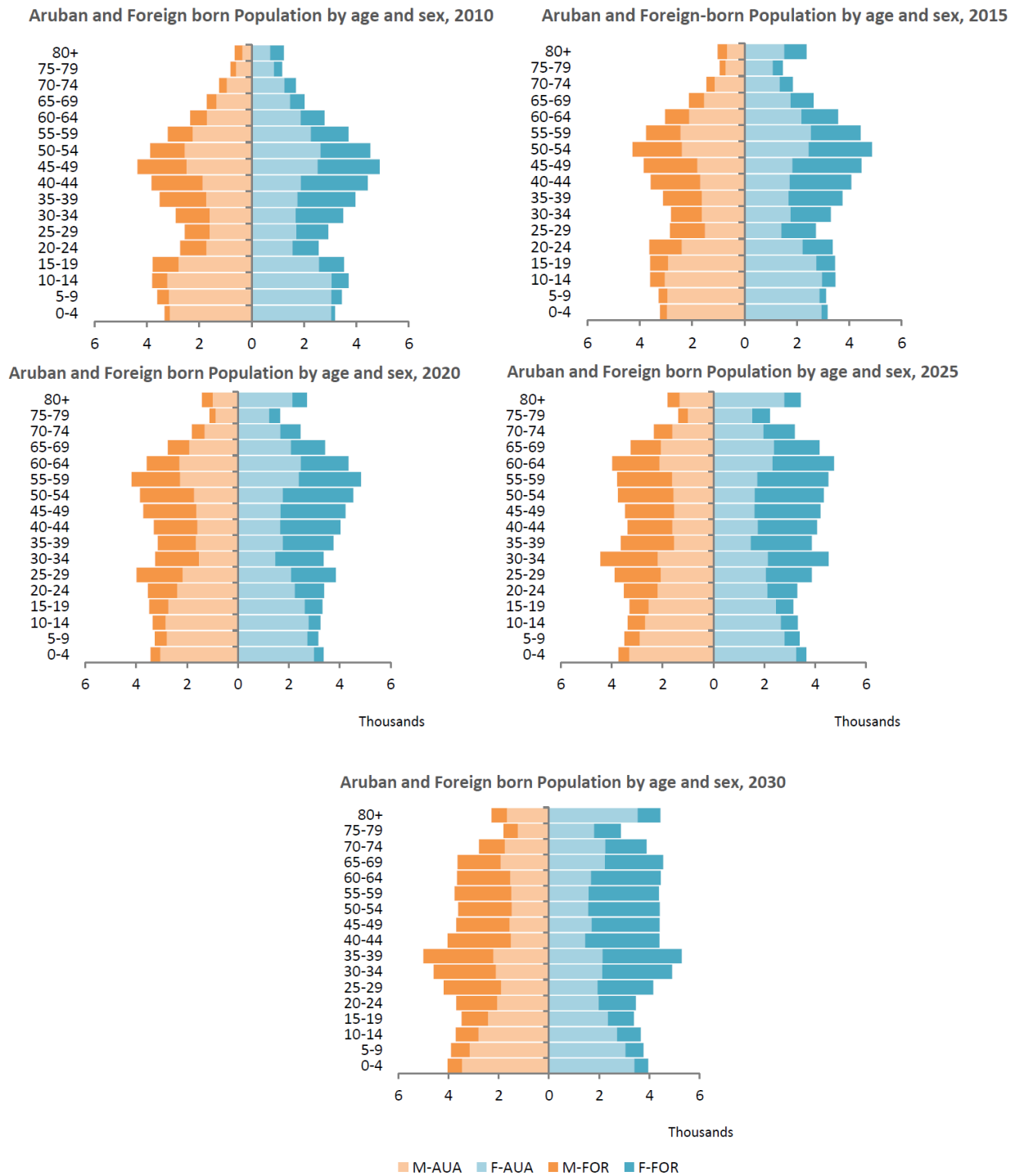
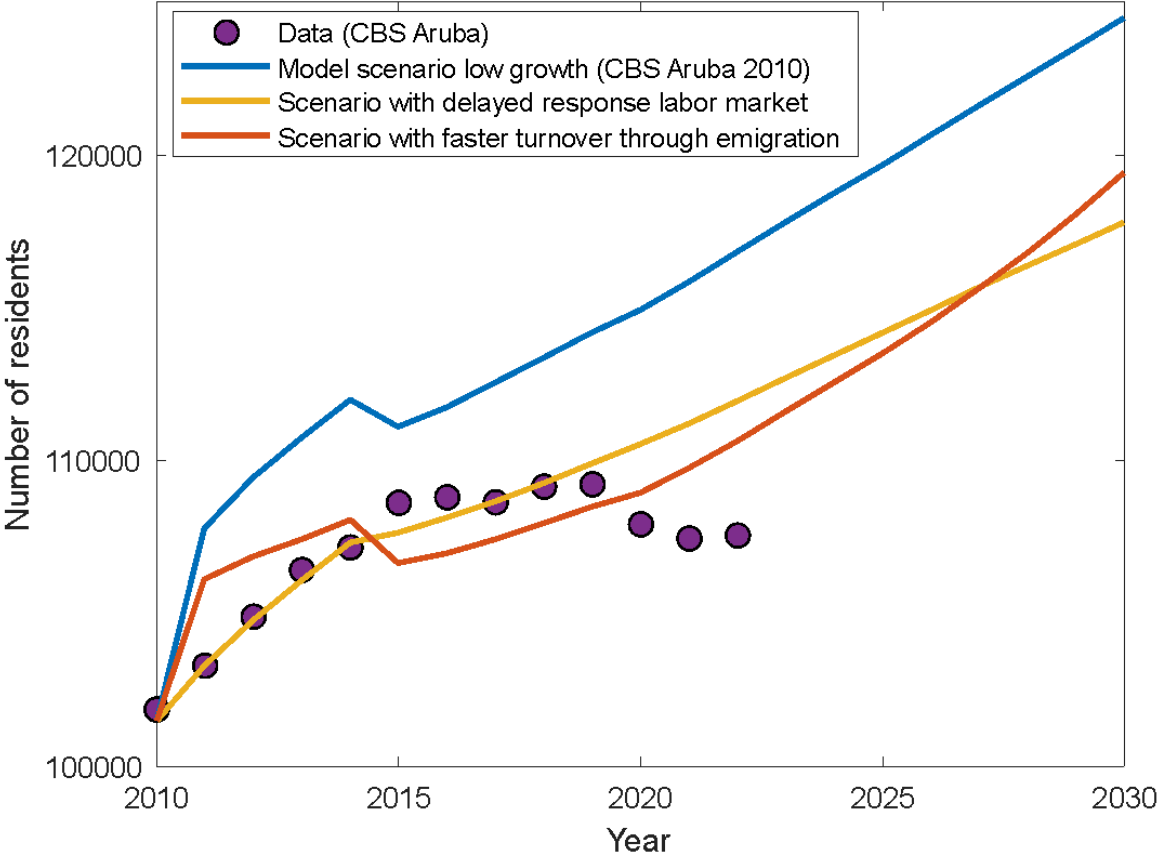


Figure 1. Population Pyramids of Aruban and Foreign born population, 2010-2030 (Medium Scenario), visual sourced from Populations Projections Aruba 2010-2030, The 2014 revision, pg 25.

# The University of Aruba Population Projection Model

Another population projection model was developed by the University of Aruba to better understand the dynamics of the labor market in Aruba, Figure 2. The first scenario replicates the 2010 CBS model, serving as a baseline for comparison.



**Figure 2. The UA Population Projection Model: Baseline (low growth), Delayed Response and Faster Turnover Scenarios**

The second scenario introduces a novel approach by calculating labor demand based on the year's GDP, offering a more dynamic view of the labor market.

In the second scenario (delayed response labor market), labor demand is calculated in terms of the number of people needed to meet the economic output indicated by the GDP. This demand is then compared to the existing labor supply, which consists of the working population on the island. The difference between labor demand and supply is assumed to represent the number of additional people required, which translates into the number of immigrants needed to

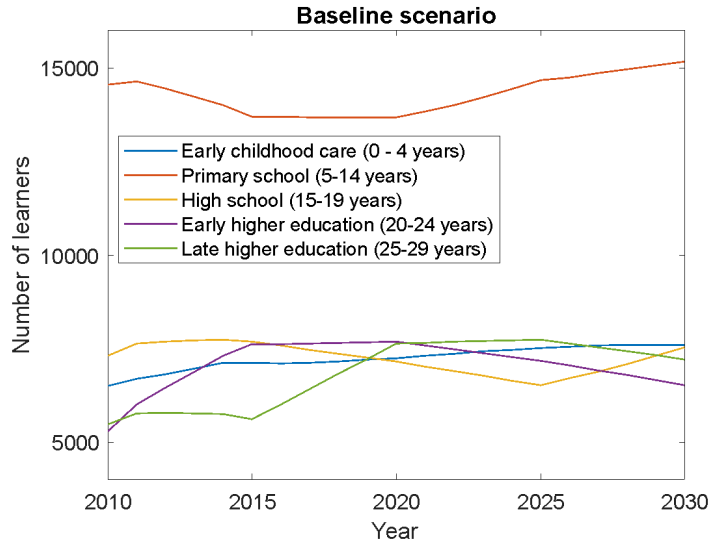
fill the gap. Therefore, this model highlights the relationship between economic growth and labor market needs, suggesting that immigration is a key factor in balancing labor demand and supply.

However, this scenario considers where the labor market response is delayed. Instead of assuming that the entire shortfall between labor demand and supply is met through immediate immigration, this scenario posits that only 40% of the required number of people immigrate each year. This delay means that it takes longer for the labor market to adjust to changes in demand, reflecting a more gradual and realistic adaptation process. This approach acknowledges potential constraints in immigration policies, logistical challenges, and the natural time lag in population movements, providing a more nuanced understanding of labor market adjustments.

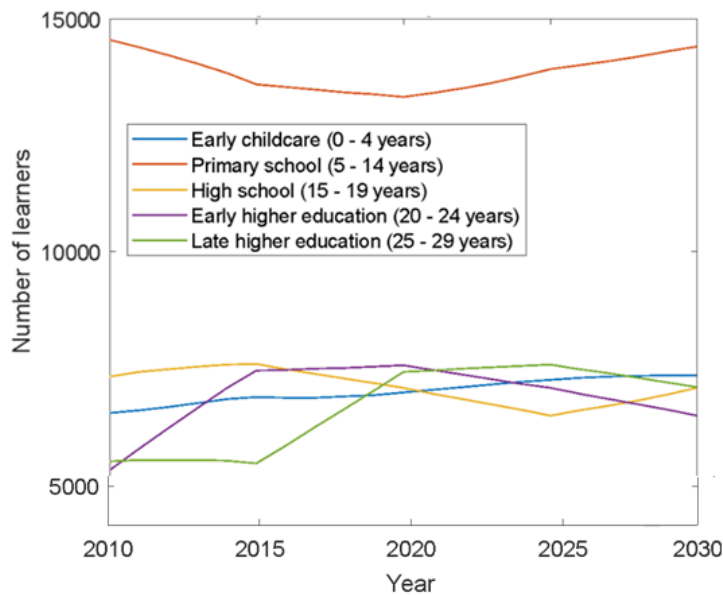
The third scenario (fast turnover through emigration) tunes the emigration of residents feature within the model. It is assumed that each year, a certain proportion of residents leave the island. In this scenario, the emigration rate is set to be four times higher than in the baseline scenario, aligning with observational data reported by CBS for the population count over the years. This higher emigration rate reflects a more volatile labor market where population turnover is significant, impacting the overall labor supply and, consequently, the labor market dynamics.

The fast turnover scenario underscores the complexities of labor market adjustments. It highlights how gradual immigration and higher emigration rates can affect the stability of the availability of labor, potentially leading to longer periods of imbalance between supply and demand. This scenario is crucial for policymakers as it illustrates the potential lag in labor market equilibrium, suggesting that proactive measures to address the underlying drivers for emigration might be needed to address these delays and ensure a more stable labor market.

Furthermore, these models provide valuable inputs for developing strategic labor market policies. By understanding how labor demand correlates with economic output and how population movements impact labor supply, policymakers can design targeted interventions to manage the demand, manage immigration, support inclusive workforce development, and address potential shortages. The insights from these models can help in crafting policies that are responsive to economic conditions, ensuring that the labor market remains robust and adaptable.



**Figure 3. Population dynamics for different categories of learners on Aruba Baseline Scenario**



**Figure 4. Population dynamics for different categories of learners on Aruba Delayed Market Scenario**

These models enhance our understanding of the labor market in Aruba. The CBS model serves as a baseline, while the second model, with its dynamic approach to labor demand and supply, provides a more detailed analysis of the effects of GDP changes and population movements. The delayed market response scenario offers a realistic view of labor market

adjustments, emphasizing the importance of considering immigration and emigration dynamics in policy development.

Together, these models offer a comprehensive tool for analyzing labor market trends and informing strategic planning in the area of education and training by closely examining the different categories of learners for different scenarios, Figures 3 and 4. First of all we can see that the trends represented in these figures confirm each other. Furthermore, one subtle difference between the two figures is the rate of change in the respective age segments due to the delay in filling the labor demand as shown on Figure 4. This type of information can be used to inform future labor market projections and hence the tailoring of training and educational initiatives. For example, the development of more educational programs in order to meet the needs of the labor market, availability of financing for citizens to access these services and other social planning structures.

For future work, the researchers at the University of Aruba plan to calibrate on specific model components (local resident population dynamics, foreign resident population dynamics, observed immigration/emigration rates) and develop further outlooks of specific future scenarios.

## Chapter 4. Labor Market

This section begins with an explanation on how the labor force is categorized and the statistics frequently used to describe it. Then the latest (2023) labor force survey and labor shortage survey results are presented and discussed.

According to the “Labour Force on the Dutch Caribbean Islands (2019)”, the term “Employed” labor force refers to individuals who engage in paid work. The term “Unemployed” labor force refers to individuals who do not have paid work but have recently looked for work and are immediately available for employment. While the term “Inactives” refers to all other individuals who are not part of the labor force, also referred to as the economically inactive population. The net labor participation rate represents the share of the employed labor force within the total population. Conversely, the unemployment rate reflects the share of the unemployed labor force within the total labor force.

The total labor force is typically influenced by legislation regarding work and retirement, which in Aruba has been gradually increased to 65 years. Despite the official retirement age, it is common for residents to continue working beyond this age due to the population finding the retirement income insufficient for sustaining their livelihood. Consequently, the data published by Aruba includes individuals aged 15 and older in the working population, affecting both the employment and unemployment rates.

### Labor Force 2023 Survey

In November 2023, the Department of Labor and Research (DAO), the Central Bureau of Statistics (CBS), and the Central Bank of Aruba (CBA) conducted their annual Labor Force Survey (LFS). The primary aim of the LFS is to provide a detailed and current overview of Aruba's labor market. By gathering data, the survey helps determine key national figures, such as employment and unemployment rates, and identifies other market trends such as shifts in the percentage of the working-age population that is either employed or actively seeking employment and changes in participation rates across different age groups and genders.

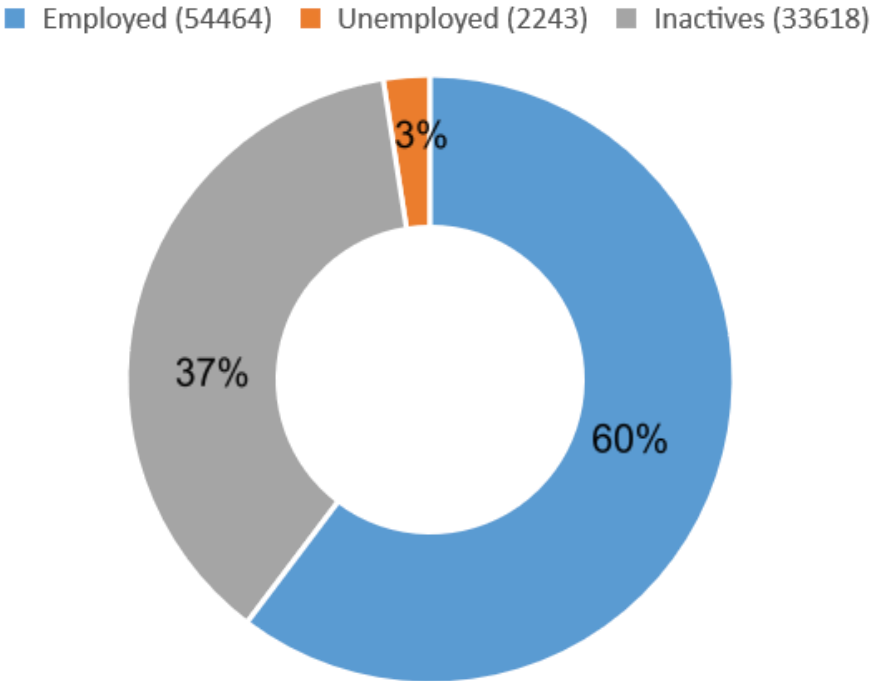
Following the COVID-19 pandemic, which necessitated a shift to telephone-based data collection, the November 2023 LFS returned to in-person data collection, targeting randomly selected households across Aruba from the CBS database. The survey included basic questions for all household members and focused on labor market-related questions for individuals aged 15 and older, the classification used for the labor force in Aruba and aligning with International Labor Organization (ILO) guidelines.

The LFS analysis indicated a 4.6% increase in employed persons compared to November 2022. The employment rate among persons aged 15 and older was 60.2%, with

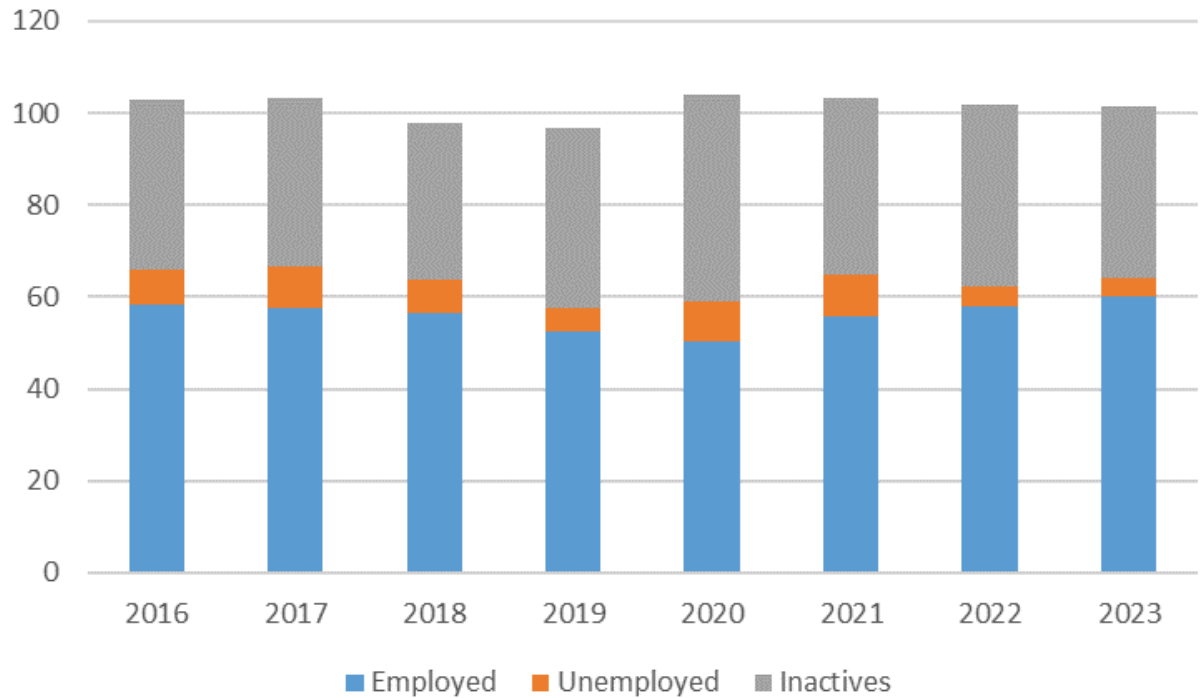
54,523 individuals employed. The number of unemployed persons decreased by 0.3% compared to November 2022, resulting in an unemployment rate of 4.0%. Noteworthy is that this is the first time in two decades that Aruba's unemployment rate has fallen below 5%, highlighting a strong recovery from the pandemic's negative impact on the labor market.

The unemployment rate among women decreased from 5.2% in 2022 to 3.9% in November 2023, while the rate among men slightly increased from 3.2% in 2022 to 4.0%. The unemployment rate among youth aged 15 to 24 rose from 9.9% in 2022 to 11.1% in November 2023, with the main reasons being: recent job search initiation (25%), inability to work full-time (13%), difficulty finding a job (10%), and lack of required diplomas (6%).

The number of people not actively participating in the labor market decreased from 39.3% in 2022 to 37.2% in November 2023. This group, primarily consisting of retirees and students not seeking employment, includes individuals who do not have a job, are not actively looking for one, or cannot start working within two weeks even if they find a job. The results from the 2023 survey are summarized in Figures 5 and 6.



**Figure 5. Labor Force by Activity Status including Absolute Numbers**



**Figure 6. Key Labor Market Indicators by Activity Status 2016-2023**

## Labor Shortage 2023 Survey

In 2023, the Chamber of Commerce conducted a comprehensive survey to assess the labor shortage affecting businesses. These findings highlight a significant challenge across various industries. They were made available to the public via the Chamber of Commerce website and at the time of this research, data surrounding the methodology used and the participants' (companies) profiles were not known. However the outcomes stated that 69% of the companies surveyed have between 1 and 50 employees, 31% are large companies with 50 or more employees and 34% have fewer than 5 employees. The results are presented in their respective labor shortage focus. These findings provide a detailed snapshot of the labor shortage challenges faced by businesses in Aruba and highlight the urgent need for targeted interventions involving policy, education and training to address this critical issue. The following 9 attention points were addressed in this document: Difficulty in Finding Qualified Candidates; Current Employee Shortage; Severity of the Labor Shortage; Availability of Skilled Labor; Impact of the Hotel Sector on Labor Demand; Primary Causes of the Labor Shortage; Future Outlook of the Labor Shortage and the Impact on Tourism; Challenging Job Roles to Fill; and Desired Government Support Measures.

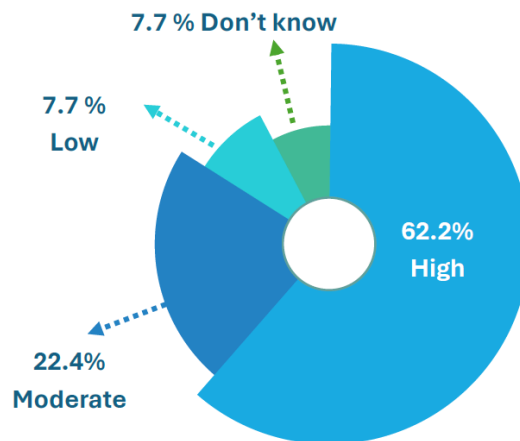
## Difficulty in Finding Qualified Candidates

Three-quarters of the companies surveyed reported having trouble in finding qualified candidates to fill job vacancies over the past year. This widespread issue indicates a significant skills gap in the workforce.

## Current Employee Shortage

41% of the companies indicated they are currently short of 2 to 5 employees. This shortage underscores the broader difficulties businesses face in maintaining adequate staffing levels.

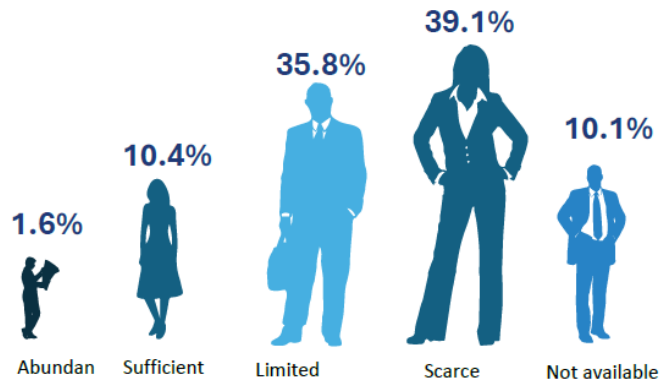
## Severity of the Labor Shortage



**Figure 7. Severity of the Labor Shortage; visual sourced from Labor Shortage Survey (2023), Aruba Chamber of Commerce Website**

The survey revealed that 62% of companies rated the severity of the labor shortage in their industry as high, 22.4% rated it as moderate, and 7.7% as low, Figure 7. This highlights the widespread and varying impacts of the shortage across different sectors.

## Availability of Skilled Labor



**Figure 8. Availability of Skilled Labor; visual sourced from Labor Shortage Survey (2023), Aruba Chamber of Commerce Website**

Figure 8 shows a significant proportion of companies (39.1%) described the availability of skilled labor in Aruba as scarce. Additionally, 35.8% noted that the availability of employees is limited. Only a small minority reported that the availability of skilled labor is sufficient or abundant.

## Impact of the Hotel Sector on Labor Demand

40% of companies reported that the growth of the hotel sector has a major impact on the demand for labor within their economic sector. This indicates a strong perceived correlation between the tourism industry's expansion and labor shortages in other sectors.

## Primary Causes of the Labor Shortage

The primary causes of the labor shortage in Aruba have been identified through the survey, with several critical factors highlighted. The limited availability of local talent, noted by 54.4% of respondents, is a significant issue, as it directly impacts the ability of businesses to fill vacancies with qualified individuals. A skills mismatch, reported by 34.2% of companies, further exacerbates this problem, indicating that even when candidates are available, they often lack the specific skills required for the roles. Education and training gaps, identified by 38.4% of respondents, contribute to this skills mismatch, underscoring the need for improved academic and vocational programs to better prepare the workforce. Additionally, the aging population, cited by 19.9% of companies, presents challenges as older workers retire and there are insufficient younger workers to replace them. Competition from other companies, highlighted by 24.1% of respondents, adds pressure on businesses to attract and retain talent, often leading to

higher turnover rates. Changing workforce preferences, mentioned by 30.6% of businesses, reflect evolving attitudes towards work-life balance and job satisfaction, which can influence the availability of workers willing to engage in certain types of employment. Finally, government policies and regulations, pointed out by 25.4% of respondents, can either facilitate or hinder the ease with which businesses can hire and manage employees, indicating a need for regulatory adjustments to better support the labor market.

## *Future Outlook of the Labor Shortage and the Impact on Tourism*

The outlook on the labor shortage in Aruba over the next one to two years is overwhelmingly pessimistic among businesses. Over half of the companies surveyed anticipate that the labor shortage will worsen. This expectation is fueled by a combination of factors, including the limited availability of local talent, a persistent skills mismatch, and gaps in education and training. The businesses' outlook suggests that without significant interventions, these issues are likely to intensify, leading to an even more challenging hiring environment. This sentiment is compounded by the belief that the structural issues underlying the labor shortage are not being adequately addressed, which further dampens optimism.

In stark contrast, a small contingent of 8% of companies holds a more optimistic view, believing that the labor shortage situation will improve. This minority likely envisions potential improvements through initiatives such as enhanced educational programs, better alignment between industry needs and training curricula, or government reforms aimed at easing hiring processes. However, these measures are either on the agenda and usually take some time to show results. Approximately a third of the businesses surveyed expect the labor shortage to remain unchanged. This group likely perceives the current efforts to mitigate the labor crisis as insufficient to either improve or exacerbate the situation significantly. They might foresee a status quo where the existing shortages continue without dramatic changes in either direction.

The perceived impact of the labor shortage on tourism from the sample survey is particularly concerning. Nearly two-thirds, around 66%, of companies predict that the labor shortage will have a severe impact on the tourism sector and given that tourism is a critical component of Aruba's economy, this forecast suggests potential long-term economic impacts. The lack of adequate staffing in hospitality and related services can lead to decreased service quality, longer wait times, and overall lower customer satisfaction, which results in a heavy burden on the existing infrastructure of the island.

Meanwhile, 16% of companies believe the impact on tourism will be moderate, suggesting that while the labor shortage will pose challenges, it might be manageable with strategic adjustments. A smaller segment, 7%, views the impact as mild, indicating confidence in their ability to navigate the labor shortage with minimal disruption to their operations. These

varying perspectives highlight the diverse experiences and expectations of businesses facing the labor shortage crisis in Aruba.

### *Challenging Job Roles to Fill*

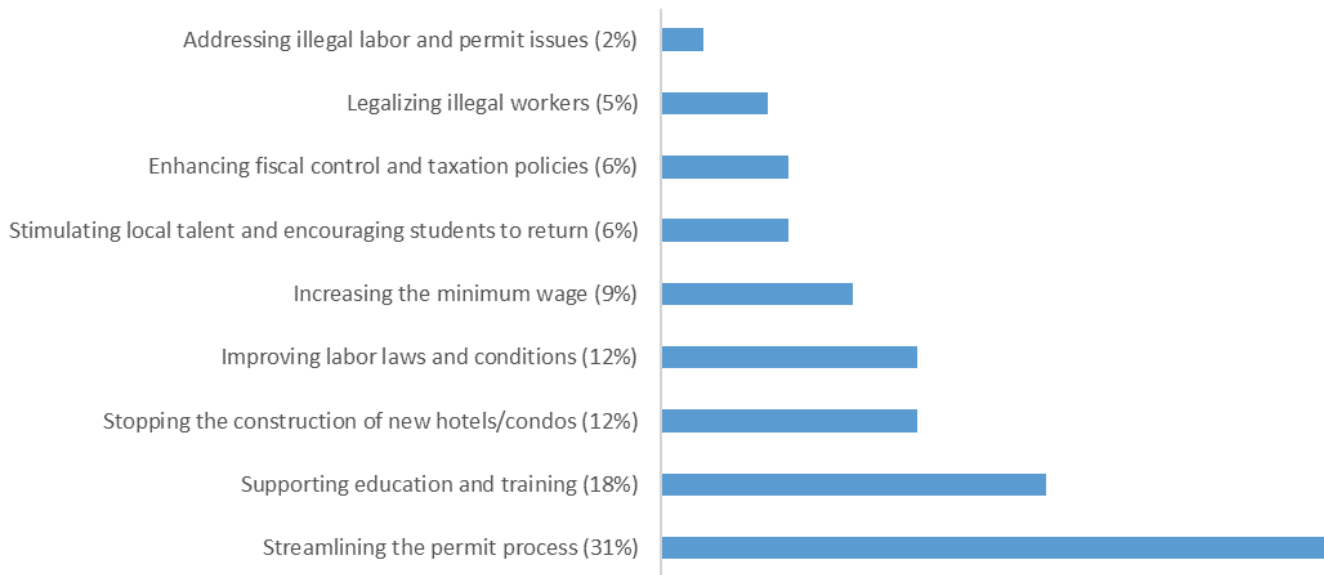
The labor shortage in Aruba is most acutely felt in several key job categories, highlighting specific roles where businesses struggle to find qualified candidates. The most significant shortage is in the area of cleaners, room attendants, maintenance staff, gardeners, pool attendants, and recreation personnel, with 15% of companies identifying these roles as particularly challenging to fill. These positions are critical for maintaining the quality and functionality of hospitality services, and their scarcity can directly affect customer satisfaction and operational efficiency in the tourism sector, which is a vital part of Aruba's economy.

Another 15% of businesses face difficulties in hiring for sales and customer service roles, drivers, and cashiers. These roles are essential for day-to-day operations in retail and service industries, ensuring smooth transactions and customer interactions. A shortage in these positions can lead to a decrease in service and ultimately, a negative impact on business profitability. Cooks, chefs, waiters, dishwashers, baristas, night auditors, and other entry-level positions are also in high demand, with 14% of companies reporting challenges in filling these roles. These positions are crucial in the food service and hospitality industries, directly impacting the tourism sector.

The shortage extends to more specialized roles as well. Engineers, production assistants, architects, technicians, electricians, machine operators, and other professionals are highlighted by 10% of businesses as hard to find. These technical and professional roles are essential for innovation, infrastructure development, and technological advancements, which are critical for the long-term growth and competitiveness of businesses in Aruba. Similarly, 10% of companies report a shortage in accounting and administration roles, risk management compliance, insurance roles, and HR managers. These positions are vital for ensuring the smooth operation of businesses, maintaining financial health, managing risks, and supporting human resources functions. A lack of qualified professionals in these areas can lead to inefficiencies, increased risks, and difficulties in managing workforce-related issues.

### *Desired Government Support Measures*

To address the labor shortage, businesses expressed a need for several specific changes and support measures from the government as illustrated in Figure 9.



**Figure 9. Desired Government Support Measures; adapted from the Labor Shortage Survey (2023),**

**Aruba Chamber of Commerce Website**

A significant 31% of respondents emphasized the need to streamline the permit process. Supporting education and training was deemed important by 18% of the companies. Additionally, 12% of businesses called for a halt in the construction of new hotels and condos, while another 12% advocated for improving labor laws and conditions. Increasing the minimum wage was suggested by 9% of the respondents. Measures to stimulate local talent and encourage students to return were supported by 6%, and an equal percentage highlighted the need to enhance fiscal control and taxation policies. Legalizing illegal workers was proposed by 5% of the businesses, and 2% stressed the importance of addressing illegal labor and permit issues.

Overall, the labor shortages across these varied roles underscore the urgent need for targeted interventions in training, education, and policy reforms to address the gaps and support the sustained growth of Aruba's economy.

## Chapter 5. Emerging Themes from the Literature

In an era of rapid technological advancement and demographic changes, it is crucial for the labor market and education to be closely aligned. Findings from the "E-Government Road Map" and the "National Action Plan 2023 - 2025" highlight a clear focus on the digitization of government services and economic diversification, with special attention to renewable energy. These documents emphasize the critical use of technology for sustainable development and improved service delivery, as well as the necessity of citizen engagement in the implementation process. In this chapter we present the findings of a close reading that was performed on these documents.

### Theme 1: Labor Market Trends

One of the key trends in the labor market is the aging workforce. The number of older workers is increasing, while the number of younger workers is declining. This requires HRM practices aimed at retaining older employees and ensuring knowledge transfer. At the same time, technological advancements such as automation and artificial intelligence (AI) are profoundly changing the job landscape. While these developments create new opportunities, they are particularly accessible to highly educated individuals.

### Theme 2: Changing Skill Requirements

The demand for advanced skills is growing, especially in sectors like healthcare, technology, engineering, finance, and risk management. To meet this need, knowledge of digital technologies and sustainable energy solutions is essential. Additionally, innovation and adaptability are crucial competencies for workers to adjust to new professions and processes. Investments in education and training are therefore vital to prepare the workforce for a digital and sustainable future.

### Theme 3: Labor Market Shortages

The labor market faces a shortage of highly educated professionals, particularly in healthcare, finance, technology and engineering. Furthermore, 21st-century skills such as digital

literacy, critical thinking, and creativity are in high demand. Besides highly educated individuals, there is a continuous need for skilled tradespeople in construction, manufacturing, and crafts.

## Theme 4: The Role of Education

Education plays a crucial role in addressing these labor market trends. Educational programs must closely match labor market needs, with a strong emphasis on STEM (science, technology, engineering, and mathematics), finance, healthcare, and Technology and Engineering. Lifelong learning is essential to keep up with changing skill requirements, through both formal and informal education. Practical learning, such as internships, work-study programs, and dual degrees, provides valuable hands-on experience and better prepares students for the labor market.

## Theme 5: Flexibility and Inclusivity

Educational institutions need to be flexible and able to adapt to market changes. Short courses and certification programs, such as TIVET (Technical Industrial Vocational and Entrepreneurship Training) and certificate programs offered by the Higher Educational Institutes on the island, can help in this regard. Additionally, it is important that education is accessible to all demographic groups, including older individuals and those with disabilities, to promote a diverse and competent workforce.

In summary, to meet the trends and needs of the labor market, a strategic focus on education is necessary. This requires continuous adaptation and innovation in education policies and practices. Inclusive education is crucial to foster a diverse and capable workforce ready for future challenges. The analysis underscores the need for close collaboration between educational institutions and the labor market, with flexibility, innovation, and inclusivity at its core. This way, we can create a resilient and dynamic labor market prepared for the challenges of the 21st century.

## Chapter 6. Recommendations and Conclusion

This research underscores the importance of continuous data collection and analysis to monitor labor market developments. Regular updates to the data and ongoing analysis will be crucial in ensuring that labor market policies remain relevant and effective in addressing the needs of the population. By maintaining a robust system for labor market analysis, Aruba can better navigate economic changes and ensure that its workforce and labor market are well-prepared for future challenges and opportunities; including the analysis of the impact of the undocumented population, the consequences of labor migration (influx) and brain drain (outflux) as well as the livability for the island's residents. Since the population growth due to labor market dynamics also increases stress on the island's already limited resources this calls for addressing the wellbeing of Aruba's citizens in a quickly changing demographic landscape.

Based on the results presented, we can formulate a set of preliminary recommendations that still require further study to address labor market trends, changing skill requirements, labor market shortages, the role of education, and the need for flexibility and inclusivity. These can be summarized as follows:

### Addressing the Aging Workforce and Ensuring Knowledge Transfer

- Implement policies aimed at retaining older workers, such as flexible working hours, part-time opportunities, and phased retirement plans.
- Offer continuous learning and upskilling programs tailored for older employees to keep them engaged and updated with new technologies.

### Embracing Technological Advancements

- Provide training programs focusing on automation, AI, and other emerging technologies to ensure employees are equipped with the necessary skills.
- Encourage a culture of innovation by supporting creativity and adaptability through workshops, incubators, and innovation labs.

### Bridging the Skills Gap in High-Demand Sectors

- Develop and promote advanced professional programs in healthcare, technology, engineering, data science, finance, and risk management.
- Collaborate more with industry leaders to create curricula that reflect current market needs and trends, ensuring graduates have the relevant skills.

### Enhancing Education to Meet Labor Market Needs

- Strengthen educational programs in STEM fields and integrate digital literacy into all levels of education.
- Expand internship, apprenticeship, and work-study programs to provide students with hands-on experience.
- Promote lifelong learning initiatives through formal and informal education to ensure continuous skill development.

### Addressing Labor Market Shortages

- Emphasize the development of digital literacy, critical thinking, and creativity in educational curricula.
- Enhance training programs for skilled tradespeople in construction, manufacturing, and crafts, and promote these careers as viable and rewarding options.
- Develop strategies to retain and attract educated professionals in sectors facing shortages through competitive compensation, career development opportunities, and a positive work environment.

### Ensuring Flexibility and Inclusivity in Education

- Implement flexible short courses and certification programs that can quickly respond to market changes and evolving skill requirements.
- Ensure educational programs are accessible to all demographic groups, including older individuals, people with disabilities, and underserved communities.
- Expand Technical Industrial Vocational and Entrepreneurship Training (TIVET) and other certification programs to provide diverse pathways to employment.

### Policy and Collaboration

- Foster collaboration between government, educational institutions, and industry to align policies and initiatives with labor market needs.
- Create incentives for individuals and employers to invest in continuous education and upskilling.
- Regularly review labor market trends and adjust policies to ensure they remain relevant and effective in addressing emerging challenges and opportunities.

By addressing these areas, stakeholders can better prepare the workforce for future challenges, address current labor market shortages, and create a more adaptable and inclusive educational system that meets the evolving needs of the economy.

In conclusion, the mixed methods approach used in this research has provided some relevant insights into the labor market in Aruba. The combination of desk research, close reading, and regression analysis has enabled the researchers to answer the research question, offering valuable considerations and projections that will support the development of targeted labor market policies and educational strategies. This research not only contributes to a deeper understanding of the labor market dynamics in Aruba but also provides a foundation for future studies and policy development.

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