MINIMUM WAGE DATABASE CODEBOOK AND EXPLANATORY NOTE

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WageIndicator Foundation

WageIndicator started in 2000 to contribute to a more transparent labour market by publishing easily accessible information online. It collects, compares and shares labour market information through online and face-to-face surveys and desk research. It publishes the collected information on national websites in almost 200 countries, thereby serving as an online library for cost of living and wage information, labour law, and career advice, both for workers/employees and employers. The WageIndicator websites and related communication activities reach out to millions of people each month.

By 2024 WageIndicator has its HQ in Amsterdam (HQ) and regional hubs in Bratislava, Buenos Aires, Cairo, Cape Town, Jakarta, Islamabad, Maputo, Pune, Sarajevo and Venice. The foundation has a core team of 75 people and some 300 associates - specialists in wages, labour law, industrial relations, data science, data collection, statistics - from all over the world. On a yearly basis, WageIndicator Foundation offers around 150 internships to students from different universities. FLAME University in Pune, India, plays a key role in the intern program.

Acknowledgements

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Bibliographical information

Tijdens K.G., Amanquarnor N., Ahmad I. (2024) Minimum Wage Database Codebook and explanatory note. Amsterdam, WageIndicator Foundation

Data archive

The dataset is available upon reasonable request at **office@wageindicator.org**

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MANAGEMENT SUMMARY

WageIndicator has database-generated webpages with Minimum Wage information for more than 200 countries. This codebook details the content of the *WageIndicator Minimum Wage Database (MWDB*) and covers the minimum wage rates collected from January 2014 on. The codebook introduces a brief history of the database, the countries included and the team maintaining the database. It details the features of the database: records, updating policies, currencies, calculating policies for monthly and hourly rates, standard working hours per week, gross and net minimum wages, subminimum and piece rates, as well as the records and the exits and entries in the database.. The descriptions of the minimum wage rates have been coded regarding the industries and occupations covered as well as reference to Economic Processing Zones, firm size, workers' age, regions and cities, skill levels, domestic or agricultural workers, and foreign-born workers.

1. INTRODUCING THE MINIMUM WAGES DATA COLLECTION

History of the database

In 2000, WageIndicator started its first website with information on work and wages, soon followed by other countries.[1] In 2005, WageIndicator launched a website in India.[2] Soon the Indian team received questions from web visitors asking about the applicable minimum wage. The team collected minimum wage rates by contacting each state's Labour Department for their official *Notifications*,[3] and these rates were published online. By 2015, the website had become leading in India in this regard. It currently features all Indian minimum wages, totalling to more than 13,000 different rates. These are broken down per sector, job title, skill level or other characteristics, and updated regularly.

WageIndicator teams from other countries reported similar experiences and took similar action. South Africa also has complex minimum wages, and from 2010 onwards the WageIndicator website in South Africa posted minimum wage rates.[4] Similarly, the minimum wage pages in Indonesia made the website popular.[5] The difficulties in tracing minimum wage information may flow from the background that Labour Ministries or

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1 *https://wageindicator.org/*

2 *https://paycheck.in/*

3 *Varkkey, B., and K. P. Mehta. 2015. "The Minimum Wage Checker of WageIndicator: a note", in P. Osse. ed. WageIndicator 15 Years. Amsterdam: WageIndicator Foundation*

4 *www.mywage.co.za*

5 *www.gajimu.com*

Wage Boards are designed for decision-making while their dissemination capacities are typically not that well developed.

MW_APP and the WageIndicator Minimum Wage Database (MWDB)

In the 2000s and 2010s, WageIndicator published minimum wages on its national webpages by entering the rates directly into the websites' Content Management System. The desire to manage the data increased with more participating countries and with the need to harmonize the webpages and to keep track of updates. A spreadsheet was designed in which all rates of all countries were included in one tab while software was applied to feed these rates directly into the national minimum wage webpages, called *MW_APP*. In January 2019 the spreadsheet and the database software became operational. If rates were uprated, the outdated amount was replaced with the new one. To keep track of the rates over time a monthly data dump, hence a time series of minimum wages, was stored in the *WageIndicator Minimum Wage Database (MWDB*). The dump is made on the first day of each month and includes all records effective on the last day of the previous month.

To populate MWDB for the period from January 2014 to December 2018, information was collected from the archived WageIndicator websites and, if missing, from online sources. For six countries the time series could not be completed over 2014-18 while for another nine countries that was the case for 2014-15. Ecuador has more than 2,000 minimum wage records, which are mostly updated annually. The oldest data in MWDB is from 2020. Though WageIndicator has files covering the years from 2014 till 2019, this data was not included in MWDB, mainly because over the years the Notifications showed quite some changes in the minimum wage descriptions.

The content of *MW_APP* is communicated with the audience through the national websites.[6] The content of the *WageIndicator Minimum Wage Database (MWDB*) is available on request. This codebook addresses only MWDB and covers the minimum wage rates collected between January 2014 and June 2024.

Countries included

The *WageIndicator Minimum Wage Database (MWDB*) registers all minimum wage rates valid in 207 countries, of which all 193 United Nations members plus an additional 14 countries or dependent territories, namely, Aruba, Bermuda, British Virgin Islands, Bonaire/St Eustatius/Saba, Cayman Islands, Cook Islands, Hong Kong, Kosovo, Macao, New Caledonia, Palestine, Puerto Rico, Réunion, and Taiwan. For readability reasons we will use 'countries' here for both countries and territories.

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6 *https://wageindicator.org/salary/minimum-wage*

Currently MWDB includes 18 countries without a Statutory Minimum Wage. These are Bermuda, Brunei, Denmark, Finland, Iceland, Italy, Liechtenstein, Norway, Nauru, North Korea, Réunion, Singapore, Somalia, South Sudan, Sweden, Tonga, Tuvalu, and Zimbabwe. Since 2014, one country has changed its status, because in 2015 Germany introduced a Minimum Wage.

MWDB has time series from January 2014 on regarding the minimum wage rates for 207 countries with jointly more than 22,000 rates. One single minimum wage is specified by 93 countries, 62 countries have between two and 10 records, 22 countries between 11 and 100, nine countries between 100 and 1,000, and three countries have more than 1,000, of which India counts for more than 13,000 records.

The WageIndicator team

The Minimum Wages team is headed by Iftikhar Ahmad, expert at the WageIndicator Labour Law and Minimum Wages desk and from the Centre for Labour Research in Islamabad, Pakistan. Kea Tijdens contributed to the systems design of WageIndicator's Minimum Wage app and the Historic database. Kim Chee Leong developed the necessary software. Nii Ashia Amanquarnor contributes as data analyst and contributed to the design and maintenance of the Minimum Wage Database

2. INTRODUCING THE MINIMUM WAGES DATABASE (MWDB)

Records in MWDB

Each record in MWDB identifies one minimum wage. The record includes a description exactly copied from the *Notifications* provided by the issuing authority. Descriptions can be texts such as *National Minimum Wage*, but may equally refer to industries, job titles, or geographical areas. They may range from very detailed to very broad, in India for example from *Foundries with or without attached machine shops* to *Any manufacturing*. Descriptions may refer to a geographical entity, e.g. to the cities *Guolon, Haixi, Yushu* in the province of *Qinghai* in China, or they refer to job titles, such as *Plumber in sanitary facilities in the Free Trade Zone of the Northern Border* in Mexico.

Each record has a unique ID, called mw_code, that can have 11 to 13 digits. MW_CODE consists of country (1-3 digits), region (2 digits[7]), an indicator whether the minimum

[7] *Note that within a country the region coding could not always be applied consistently, mainly due to new entries and to changes in Government's definitions of regions, for example recently in Indonesia new provinces have been defined.*

wage has a breakdown by sector, occupation or region (3 digits[8]), reserve (2 digits) and a follow-up number per country or, in the case of India, per state (4 digits).

Example: Code = 84001001000012, Description = Arkansas, Tipped workers

In this code, 840 is the country code for USA, 01 a follow-up code for the region (=state) within USA, 001 specifies that the breakdown of the MW category is by region, 00 for reserve, and 0012 as follow-up number for the USA MW's.

Exits and entries in the database

Sometimes, Governments or Wage Boards specify minimum wages for categories, not defined before. For example, in the 2010s a growing number of cities and counties in the USA decided to lift the local minimum wage rate above the federal rate. In 2015 Germany introduced a minimum wage rate, whereas the country had none before. Similarly, Governments or Wage Boards can decide to delete categories, merge separate categories into one category, or break-up one category into two or more categories. For example, in Pakistan an increasing number of minimum wage rates could be observed for the higher-skilled job titles, whereas this was not the case for the lower-skilled job titles. A few countries decided to gradually get rid of its youth wages, e.g. Netherlands and Belgium. Since the start of MWDB in 2014 many new rates entered MWDB while only a few exited.

In case of an entry in the database, a new record is inserted in MW_APP and a code is assigned. In the monthly MWDB data dump the new record is included and the amount is inserted from the month it became valid, and all amounts in the months before the start date are assigned a missing value.

In case of exits in the database, the record remains in MW_APP but it is set to publish=0, which means that it is no longer shown on the web page. In MWDB these records are set as missing value from the month of the exit onwards.

Amounts

Each MW_code is associated with one or more amounts of the minimum wages. WageIndicator takes the rates exactly as they are presented in the *Notifications*. Estonia, for example, has a general minimum wage, expressed as an amount per hour and an amount per month. Barbados has several minimum wages, of which some are expressed per hour, others per day or per week.

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[8] *In the six years since the coding started in January 2018, these three codes have not always been applied consistently.*

Some countries specify a basic rate, an additional allowance, and a total rate. For example, in India a VDA amount needs to be added, whereby VDA stands for Variable Dearness Allowance and indicates an increase/decrease according to the Consumer Price Index (CPI). In MWDB only the total rates are included.

Currencies

All minimum wages are expressed in the local currency unit (LCU), as specified by the Governments or Wage Boards. In MWDB currencies are identified with their ISO abbreviation. In MWDB each country has one currency. As Hong Kong and China have different currencies, they are considered as being two different countries.

In case a country changes its currency, all its minimum wage rates since 2014 are adapted to the most recent denomination. The currency abbreviation is replaced with the new one. Among others, Venezuela and Zambia have changed their currency since 2014.

For cross-country comparisons the user needs to convert the monthly rates into the standardized International Dollar (Int$), using the World Bank's Purchasing Power Parities (PPP) indexes for private consumption.

Pay periods: minimum wages per hour, week, or month

For each record ME_APP registers one or multiple pay periods as specified in the *Notification*. These periods range from hours to years. In the USA all minimum rates are defined per hour, whereas in Russia all rates are defined per month. China specifies monthly rates for full-time workers and hourly rates for part-time workers. The majority of countries define one pay period per minimum wage, mostly a monthly wage. Other countries specify minimum wages per hour, per day, per week, or even per year. A few countries specify different pay periods for different minimum wages. In India, for example, the rates of low-skilled workers are typically defined per day and those of high-skilled managers per month.

Countries with monthly minimum wages typically apply standard days per month, thus the rates are equal whether a month has 28, 29, 30 or 31 days. Serbia is an exception by specifying the rates depending on the number of working hours in the month at stake -- resulting in a higher monthly minimum wage in January compared to February. Four countries specify different rates for different lengths of the working week. Cuba specifies rates for weeks of 40 and 44 hours, Aruba for weeks of 40, 42, 44 and 45 hours, Tunisia for weeks of 40 and 48 hours, and Israel for 5 and 6 days per week. Two countries, the Netherlands and Malaysia, specify similar monthly rates for different lengths of the working week. Per January 2024 the Netherlands abandoned this rule.

Sub-minimum rates and piece rates

Minimum wages typically address adult, healthy workers. Descriptions targeting youth, trainees or apprentices, tipped workers, handicapped workers or workers not covered by the Fair Labor Standards Act in the USA have been classified as sub-minimum rates.

Similarly, we have classified the rates for the home assistants (with meals) and the home assistants (living in) in Barbados being sub-minimum rates, because it is not possible to assign a monetary value to meals or to housing.

Descriptions relating the wage to the volume of the work to be performed are classified as piece rates, e.g. *Loading and unloading worker per bag*. No hourly or monthly rates have been calculated from these piece rates. Four countries specify rates for piece rate workers, namely Ecuador, India, Sri Lanka, and St Vincent and the Grenadines.

Updating minimum wage rates in MWDB

Tracing updates of minimum wages for more than 200 countries is a challenging task. WageIndicator applies four methods here. First, the team at the Centre for Labour Research is checking relevant websites of the Ministries of Labour and Wage Boards worldwide and wherever possible the team has subscribed to notifications of these websites. Second, the work is supported with a table, that specifies the most likely updating month, based on updating practices in previous years. Third, the team receives messages regarding updates from WageIndicator team members as well as from web visitors. Fourth, each quarter WageIndicator asks the members of its network of Living Wage Data collectors if they have noticed any minimum wage updates, either planned or already implemented.

For each record, the minimum wage amounts have a start date, which is the date that the rate became effective. If the start date is unknown, it is assigned 1/1/2000. If the minimum wage is uprated, the old start date in MW_APP will be replaced by the new date and the old amounts will be replaced by the new amounts. For the time series in MWDB the start date indicates in which month the new amounts became valid.

In some cases, renewed MW amounts are entered in MW_APP after the start date. In MWDB the rates between the actual start date and the check date are assigned the valid rate.

Standard working hours per week

In MWDB WageIndicator converts all minimum wages into a monthly rate. If a minimum wage is specified for a weekly or yearly pay period, a monthly rate is achieved by multiplying these rates with 4.333 weeks per month respectively dividing by 12 months per year. For rates specified per hour, monthly rates are calculated by multiplying the rate with the country's *standard weekly working hours* times 4.333. For rates specified per day, monthly rates are calculated by dividing the rate by the standard working hours per day and multiplying these with the country's standard working hours per week times

4.333. In case of multiple pay periods, monthly rates are prioritized, followed by hourly rates, and otherwise weekly and daily rates are used to compute monthly rates. MWDB does not calculate monthly rates for piece rate workers, neither does it account for 13th or 14th months or travel allowances nor does it correct for meals, accommodation or other non-monetary allowances.

The phrase *standard working hours per week* refers to the weekly working hours as defined by the Governments or Wage Boards. However, some countries - like the USA-- specify an hourly rate and leave the length of the working week to the employer. In the *Notifications* of only 50 countries the hours per week are specified. Unfortunately, worldwide data is lacking regarding standard weekly working hours. ILO provides information about mean weekly hours actually worked, based on survey data, while the World Bank presents information about the number of hours in the standard workday as well as on the maximum number of working days per week, but neither of them provides data about the standard weekly working hours. We define the standard weekly working hours as the most common weekly working days agreed in the employment contracts of full-time workers. To fill this gap, WageIndicator has developed a table with standard working hours per week for the 207 countries for all years between 2014 and 2023, based on a rigid comparison of a range of sources, including employment contracts and Collective Labour Agreements.[9]

Gross and net minimum wages in MWDB

Personal income taxation affects take-home wages. Gross wages can significantly deviate from net wages. The vast majority of countries in MWDB solely set a net minimum wage and only 30 countries set a gross minimum wage. Turkey and North Macedonia set both gross and net rates, but MWDB includes the net wages only. The countries with gross minimum wages are either OECD or EU member countries, as well as the British Virgin Islands and Cayman Islands. Due to the complexities of national tax regulations, WageIndicator is not able to convert gross into net minimum wages. MWDB includes a variable indicating whether the country applies gross or net minimum wages.

Testing for outliers

Data-entry errors are checked by means of error messages when the data is entered in MW_APP. The following tests are applied. First, the software checks if the entered amount has a numerical format and if it does not contains comma's or dots other than for decimals. Second, the software checks if the newly entered amount is not lower than the previous amount. If so, an error message pops up to notify the data entry operator

[9] *Tijdens, K.G. (2023) Explanatory note on the WageIndicator working hours database. Amsterdam, WageIndicator Foundation (https://wageindicator.org/documents/publicationslist/publications-2023/wageindicator-explanatory-note-about-working-hours_20230227.pdf)*

for an extra check. If higher, an error message pops up when the new rate is more than 5 X higher than the previous rate.

To identify outliers in MWDB, in May 2022 PPP-adjusted USD equivalents of the hourly rates have been calculated for all months between 2014 and May 2022. Values below 0.1 USD and above 25 USD have been closely examined whether these were indeed outliers. If so, the amounts were compared to the original notifications and repaired. This was a once-only check on outliers.

Missing values

MW_APP includes all ever-entered records. In case a minimum wage is no longer used by the Government or Wage Board, this record is set to publish=0, which means that it is no longer shown on the web page. All other records are coded publish=1. In MWDB, which is the monthly data dump of MW_APP, these exits are assigned a missing value from the month they exited, but the code remains in the database.

MWDB has five different missing values

value	explanation
-9	when the information was impossible to collect; this particularly applies to MW rates in 2014 and 2015
-8	when the country has no Statutory Minimum Wage
-7	when the MW rate is a piece rate and therefore no monthly rate could be calculated
-6	when the MW code has exited, however, exits are only registered after the check of MWDB in May 2022
-5	when a MW code enters the database after May 2022, all previous months are assigned value -5

Coding the specifications of minimum wages

The minimum wage descriptions can be texts such as *National Minimum Wage*, but may equally refer to industries, job titles, geographical areas or other categories. These descriptions have been coded manually for the categories in the table below.

Value	Explanation
Domestic workers	The description includes phrases as Domestic work, Home assistant, Domestic Helper, Live-in domestic worker, Housemaid, Support and caretaker, or just Household work
Unskilled workers	The description refers explicitly to unskilled work
Agricultural workers	The description ranges from Harvesting, Weeding, Grass cutting, to Agriculture, Livestock and Forestry, Harvesting of Coffee, or Farm worker
Piece rate workers	In the description the minimum wage is related to the volume of the job to be performed
Small firm size groups	The description refers to the numbers of employees in the company, e.g. Oil Mills (for less than 10 employees), a size category, e.g. Small companies, or a company's turnover, e.g. Employers with annual gross volume of sales of USD 500,000 or more
Export processing zones (EPZ)	The description refers to phrases such as EPZ, Free Trade Zone (FTZ), Special Economic Zone (SEZ), Maquiladoras, Toll Tax Barriers or Freight transport in free zones
Young age groups	The description refers to the age of a worker; most common are breaks under and over 17 or 18 years of age
Geographical areas	The description refers to a geographical area. It has been coded according to the WageIndicator regio_API with provinces/counties/states within a country, followed by the main cities here within. For countries with rates that apply to regions within the countries, the description includes the GPS coordinates of the applicable region.
Occupations	The description refers to a job title; these are coded according the International Standard Classification of Occupations (ISCO-08) and depending on the level of specification coded for ISCO 1 digit, 2 digit, 3 digit or 4 digit. Is assigned value = 0 if the description does not refer to a job title; value = 9999 if the description is only codable at higher level of aggregation

Value	Explanation
Industries	The description ranges from very broad activities, such as Agriculture, fishery, food manufacturing to very narrow definitions such as Banana plantations and other tropical fruit crops; these are coded according the Statistical Classification of Economic Activities in the European Community (NACE) and depending on the level of specification coded for NACE 1 digit, 2 digit or 4 digit. Is assigned value = 0 if the description does not refer to an industry; value = 9999 if the description is only codable at higher level of aggregation

3. VARIABLES AND VALUES IN MWDB DATABASE

VARIABLE IN MW DATA-DUMP	Explanation of variable	VALUE LABELS
mw_code	Unique ID: COUNTRY (1-3dgts) REGION (2dgts) BREAKDOWN (3dgts) RESERVE (2dgts) FOLLOWUP_NR PER C0UNTRY (4dgts)	
country_code	ISO alpha-2 country code	
country_a	ISO numerical country code	
nat_cur	ISO alfa3 currency code in LCU	
include_for_mw_lowest_calculatio	MW category is not a youth-apprentice-parttime rate and should thus be included in the calculation for the lowest rate	0=no 1=yes
regicluster	Region cluster - cluster of REGIHOM1, for labels see REGI_API	0=none + codes from regio_API
regihom1	Region home address - aggregate geo info, for labels see REGI_API	0=none + codes from regio_API
regihom2	Region home address - detailed geo info, for labels see REGI_API	0=none+ codes from regio_API
nace2000	MW category identifies NACE_rev2 industry code 4 groups, for labels see INDUSTRY_API	0=none + codes from industry_API
nace2001	MW category identifies NACE_rev2 industry code 1-digit, for labels see INDUSTRY_API	0=none 9999=only codable at higher level of aggregation
nace2002	MW category identifies NACE_rev2 industry code 2-digit, for labels see INDUSTRY_API	0=none 9999=only codable at higher level of aggregation
nace2004	MW category identifies NACE_rev2 industry code 4-digit, for labels see INDUSTRY_API	0=none 9999=only codable at higher level of aggregation
agriculturerural	MW category identifies agriculture or rural rates	0=no 1=yes
nonagricultural	MW category identifies non-agricultural rates	0=no 1=yes

VARIABLE IN MW DATA-DUMP	Explanation of variable	VALUE LABELS
domestics	MW category identifies rates for domestic workers	0=no 1=yes
age	MW specifies MW rates for age groups	0=no, age groups
epz	MW specifies MW rates for EPZ zones (export zones)	0=no 1=yes
isco0801	MW category identifies ISCO08 occupation code 1-digit, for labels see ISCO08_1-4digit_API	0=none 9999=job title included but too vague to be coded
isco0802	MW category identifies ISCO08 occupation code 2-digit, for labels see ISCO08_1-4digit_API	0=none 9999=only codable at higher level of aggregation
isco0803	MW category identifies ISCO08 occupation code 3-digit, for labels see ISCO08_1-4digit_API	0=none 9999=only codable at higher level of aggregation
isco0804	MW category identifies ISCO08 occupation code 4-digit, for labels see ISCO08_1-4digit_API	0=none 9999=only codable at higher level of aggregation
skilllevel_in_mw_category	Skill level from ISCO08 & from reference in MW category	0=none
firmsize	MW category refers to firm size workplace	0=no
nat_min_wage_default	MW category refers to a general minimum wage for the entire adult labour force	0=no 1=yes
regional_min_wage_default	MW category refers to a general minimum wage for the entire adult labour force for region	0=no 1=yes
foreigndich	MW category refers to foreign born workers	0=no 1=yes
cntraggr_nmw	Country has a national minimum wage for the entire adult labour force	0=no 1=yes
cntraggr_obs	Number of mw rates per country	
cntraggr_regio	Country has mw rates for regions	0=no 1=yes
cntraggr_gross	MW category has gross amounts	0=no 1=yes
cntraggr_type	categorization of mw rates per country	One rate with nmw Multiple rates without nmw with regional breakdown Multiple rates with nmw without regional breakdown Multiple rates without nmw without regional breakdown No SMW One rate without nmw Multiple rates with nmw with regional breakdown

VARIABLE IN MW DATA-DUMP	Explanation of variable	VALUE LABELS
label	Text of level of minimum wage	Eg. IND_Meghalaya_Animal Husbandry and Veterinary _Skilled
hrspweek"yyyy"	the standard working hours per week for the year "yyyy" from HRSSTAND_API.[10]	
mw_mo_lcu_"yyyy"M"mm"	Applicable monthly rate in LOCAL Currency Units (LCU) per year per month	yyyy= year mm = month

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[10] *The API identifies the standard working hours per week and per day, see* ***https://wageindicator.org/about/researchlab/working-hours-and-leave-regulations***