

# Appendix: Methodology Calculating t

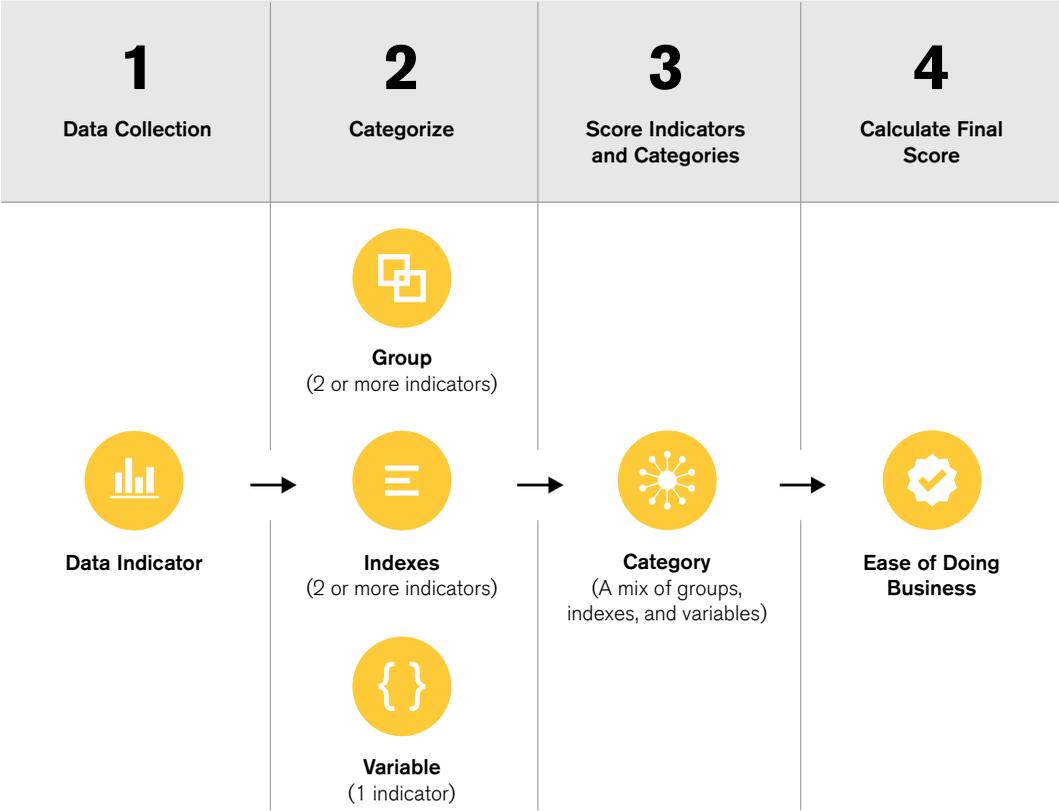


**Doing Business  
North America**

# y and the Scores

# Ease of Doing Business Score

## Methodology



## What is the Ease of Doing Business Score?

The primary objective of the *Doing Business North America* report is to provide a measure of the ease of doing business for cities in North America. At least one city per state or province was scored. The District of Columbia was included as well. For states with much larger populations than average, more cities (up to four of the largest in the state or province) were included. The Ease of Doing Business Score is derived from a summation of the scores awarded in each of the six categories measured by this report. The Ease of Doing Business Score focuses on the regulatory burdens a small- to medium-sized business would face from the birth of the business to the death of the business in cities across North America. The following explains the process of arriving at the final score.

### Steps 1 and 2: Collecting and Categorizing the Data

The *Doing Business North America* team collected data on 63 different regulatory and economic indicators across six different categories. The data collected came entirely from publicly available sources, including many published by the municipal governments we studied. Each observation is termed an “indicator.” Once collected, these indicators were then classified into one of three types: (i) a variable, (ii) a group, or (iii) an index.

#### Variable

A variable is the most common classification found throughout a dataset. These types of indicators are generally considered the most important, define the theme of the category, and are not combined into larger groups of indicators. To put it another way, a variable consists of only one indicator. For example, in the Starting a Business category, indicators that show the number of procedures to start a business, the time to establish a business, or the cost to start a business are all treated as variables. Although these three indicators have the same general theme, they each reflect an important and unique aspect related to the process of starting a business and make up the foundation of the category. They also use three different units of measurement – the procedures indicator measures the number of steps, the time indicator measures the number of days, and the cost indicator measures the number of dollars.

#### Group

Groups consist of two or more indicators that share similar attributes that can be combined. When combined, that group is considered a variable in the scoring process. An example of this can be seen in the Employing Workers category, in which there is a group of indicators measuring severance pay for workers with different tenure periods: There is an indicator that measures severance pay for workers with one year of tenure, an indicator for severance pay with five years of tenure, and an indicator for severance pay with 10 years of tenure. Because these three indicators all measure the same thing (but simply measure different time ranges) and all are measured using the same units, these three indicators are grouped together (in this case, averaged together) and then treated like a variable for scoring purposes. A group is the rarest collection of indicators found throughout the data.

#### Index

Indexes are a collection of indicators (similar to a group) that share a theme. However, there are two important conditions that must both be met for a collection of indicators to be treated as an index instead of as a group: (i) the indicators are binary in nature; and (ii) on their own, they do not rise to

the importance of a variable but grouped together they describe an important element of the Ease of Doing Business analysis. An example of this can be seen in the Registering Property category, where there are several indexes used in the Quality of Land Administration Index, which itself is comprised of the Reliability of Infrastructure Index and the Transparency of Information Index. This transparency index measures various attributes of the land administration system, such as whether information on land ownership is made publicly available (a “yes” or “no” answer) or whether the agency in charge of immovable property registration commits to a specific time frame (a “yes” or “no” answer). These two indicators are grouped together to form an index. Additionally, indexes can be combined to form an even broader index as described above for the Registering Property category.

Finally, by the end of this process the data was categorized as either a variable (consisting of one indicator), a group (consisting of two or more continuous or binary indicators), or an index (consisting of two or more binary indicators). Each of them has equal weight in the category score (as we shall see soon).

### **Step 3: Scoring the Indicators and Categories**

The indicators are scored following one of two procedures, depending on whether the data type is binary in nature (which is collapsed into indexes) or continuous in nature (which becomes variables on their own or combined in groups). Indexes and groups are also scored.

#### **Binary Indicators**

Binary indicators are the simplest of all the indicators. These indicators measure whether a policy exists. Locations where that policy exists are marked as 1 or “yes,” and locations where the policy does not exist are marked as 0 or “no.” Next, we determine whether the policy is harmful or beneficial to the ease of doing business – in other words, we decide whether a “1” or “yes” should be considered the best score or the worst score. So, for instance, if a policy is considered beneficial, locations with this policy (observations that are labeled with a 1 or “yes” in the data indicator) are awarded one point, and locations without this policy (locations that were labeled with a 0 in the data indicator) are awarded zero points. A collection of binary indicators can then be combined into an index by simply adding the ones and zeros to create the index score.

#### **Continuous Indicators**

The scoring of continuous indicators requires a little more work. The first step for analyzing a continuous indicator is to determine the default assumption about what is considered most favorable for the ease of doing business as described above. However, due to the large range of some indicators (indicators that either involve ratios or costs are notorious for having large variance) and the need to avoid outliers skewing the overall score, a threshold of two standard deviations greater than the mean is sometimes used to define the upper boundary for an indicator and a threshold of two standard deviations less than the mean is sometimes used to define the floor.

Once a specific numeric range and directionality have been established, a city’s score for that indicator is determined using the equation  $((A-B)/(A-C))*10$ , where A is the lowest observation (or “lowest performer”) for an indicator, across all locations, B is the observation for the location being scored, and C is the highest observation (or “highest performer”) for an indicator across all locations.

This calculation produces values within a range of zero to 10, where the location(s) with the lowest regulatory performance (or those outside two standard deviations from the mean) are awarded no points, and the location(s) with the best regulatory environment are awarded 10 points. Cities in between the top and bottom receive scores based on their relative position as defined by the equation – where they end up in relation to the “frontier” of the highest-ranked indicator value. This “distance to frontier” equation and scoring method for continuous indicators can be applied to all types of indicators.

### **Groups**

This “distance to frontier” method is also used when scoring groups. The difference is that, after deciding the directionality, the sum of all indicator scores within the group is first divided by the number of indicators included in the group, producing an average for that group. Then that average is scored based on the group’s distance to the frontier using the formula above.

### **Indexes**

Indexes are scored in a similar fashion. The top and bottom values are assigned and the numeric score is calculated using the “distance to frontier” formula.

### **Scoring the Categories**

To generate a score for a particular category, the scores among all variables, groups, and indexes within the category must first be aggregated. That aggregate score is then divided by the total number of indicators. This creates an average for the entire category. The average value for a category is used so that locations with missing or incomplete data are still able to be ranked and scored in a similar fashion to those with a complete dataset and not penalized by lack of data. That average value is the category score.

## **Step 4: Calculating the Ease of Doing Business Score**

The Ease of Doing Business Score is derived by summing the scores from all categories. That sum is then divided by the total number of indicators across all categories. (Because that denominator is usually between 27 and 30 unique variables, groups, or indexes across all categories, the effect of missing data is significantly reduced at this level of aggregation.) This number is then multiplied by 10 to allow the final score to resemble a percentage (i.e., out of 100%). For example, the highest-scoring city (Oklahoma City) is 8.47, but when multiplied by 10, this becomes 84.70, which approximates an Ease of Doing Business percentile score of around 85%.

# Starting a Business



## Methodology

### What Does Starting a Business Measure?

*Doing Business North America* records all procedures officially required for an entrepreneur to start up and formally operate a limited liability company, as well as the time and cost to complete these procedures. These procedures include the processes entrepreneurs undergo when obtaining all necessary approvals, licenses, and permits, and completing any required notifications, verifications, or inscriptions for the company and employees with relevant authorities.

After a study of laws, regulations, and publicly available information on business entry, a detailed list of the most common procedures was developed, along with the time and cost to comply with each procedure under normal circumstances.

Information is also collected on the sequence in which procedures are to be completed and whether procedures may be carried out simultaneously. It is assumed that any required information is readily available and that the entrepreneur will pay no bribes.

#### ASSUMPTIONS ABOUT THE BUSINESS

**100%**

Domestically owned

**50**

Has up to 50 employees

**2x**

Has start-up capital of two times income per capita

## Assumptions about the Business

To make the data comparable across economies, several assumptions about the business are used.

### The business:

- Is a limited liability company. If there is more than one type of limited liability company in the economy, the limited liability form most common among domestic firms is chosen.
- Operates in the economy's largest business city. For 14 of the largest economies, the data for multiple cities is collected.
- Is 100% domestically owned.
- Has start-up capital of two times income per capita.
- Performs general commercial activities, such as the production or sale to the public of goods or services. The business does not perform foreign trade activities and does not handle products subject to a special tax regime.
- Does not qualify for any financial incentives or special benefits.
- Has up to 50 employees.
- Has a company deed that is 10 pages long.

## Indicators

### Number of Procedures

A procedure is defined as any interaction of the company founder with external parties. Procedures that must be completed in the same building but in different offices or at different counters are counted as separate procedures. If the founder has to visit the same office several times for different sequential procedures, each is counted separately. The founder is assumed to complete all procedures themselves, unless the use of such a third party is mandated by law. If the services of professionals are required, procedures conducted by such professionals on behalf of the company are counted as separate procedures. Each electronic procedure is counted as a separate procedure. Only pre-incorporation procedures that are officially required or commonly done in practice for an entrepreneur to formally operate a business are recorded.

Procedures required for official correspondence or transactions with public agencies are also included. For example, if a company seal or stamp is required on official documents, such as tax declarations, obtaining the seal or stamp is counted. Similarly, if a company must open a bank account in order to complete any subsequent procedure, this transaction is included as a procedure.

Only procedures required for all businesses are included. Industry-specific procedures are excluded. Procedures that the company undergoes to connect to electricity, water, gas, and waste disposal services are not included in the Starting a Business indicators.

### **Time (in Calendar Days)**

Time is recorded in calendar days. It is assumed that the minimum time required for each procedure is one day. Procedures that can be fully completed online are also considered to take one day. Although procedures may take place simultaneously, they cannot start on the same day, unless procedures can be completed entirely online. The registration process is considered completed once the company has received the final incorporation document or can officially commence business operations. It is assumed that the entrepreneur does not waste time and commits to completing each remaining procedure without delay. The time that the entrepreneur spends on gathering information is not measured. It is assumed that the entrepreneur is aware of all entry requirements and their sequence from the beginning but has had no prior contact with any of the officials involved.

### **Cost (as a Percentage of Income per Capita)**

Cost is recorded as a percentage of the economy's income per capita. It includes all official fees and fees for legal or professional services if such services are required by law or commonly used in practice. Fees for purchasing and legalizing company books are included if these transactions are required by law. In all cases the cost excludes bribes.

## **How the Starting a Business Category is Ranked and Scored**

The 'Starting a Business' category was ranked and scored using the following three indicators:

<b>Topic and Indicator</b>	<b>Highest Performer</b>	<b>Lowest Performer</b>
Number of Procedures	2 procedures	11+ procedures
Time (in Calendar Days)	1 days	57+ days
Cost (% of Income per Capita)	0.12%	31.57%+

For each indicator, there is a top performer and a bottom performer. Economies with the best performance for a given indicator are awarded 10 "points," or a score of 10. Cities at the level of bottom performance, or cities at or below two standard deviations from the mean, are awarded a score of 0. All the cities in between are scored based on their distance to the frontier. For each city, the number of awarded points across all indicators is aggregated, then divided by the number of indicators for which we had data. This is done because not all locations have complete data across all indicators, and doing so allows for all locations to be included in comparison.

For more information on how indicators, indexes, and groups are scored, how the ranking and scoring system for a category works, or how the overall Ease of Doing Business rank and score were derived, please read the first section of this methodology.

# Employing Workers



## Methodology

### What does Employing Workers Measure?

*Doing Business North America* records a myriad of variables related to the flexibility and regulation of employing workers, specifically as it relates to the areas of hiring, working hours, laying off workers, and leave. There are 13 indicators used to represent the legal requirements or fiscal burdens necessary to comply with an economy's labor laws.

### Assumptions about the Business and Worker

To make the data comparable across economies, several assumptions about the business and the worker are used.

#### The business:

- Is a limited liability company (or the equivalent in the economy).
- Is not subject to collective bargaining agreements.
- Abides by every law and regulation but does not grant workers more benefits than those mandated by law or regulation.

#### The worker:

- Is a full-time employee (works 2,080 hours per year).
- Is in their second year of employment and is eligible for all employment benefits.
- Is not a member of a labor union, unless membership is mandatory.
- Earns minimum wage.

## Indicators

### **Ratio of Annual Minimum Wage to Income per Capita**

The ratio of annual minimum wage to income per capita is calculated by using a location's hourly minimum wage (in USD), multiplied by the number of work-hours in a year (2,080), then divides those annual minimum wage earnings by a location's income per capita.

### **Maximum Length of Probationary Period (in Months)**

The maximum length of probationary period measures how long new employees are eligible to be classified under a probationary period. The length is measured in calendar months.

### **Maximum Number of Working Days per Week (in Calendar Days)**

The maximum number of working days per week measures how many days an employer is allowed to request of an employee before one of two events occurs: (i) the employer must pay overtime due to too many consecutive days of work or (ii) the employee is able to opt out of a shift without compromising their employment. It is measured in calendar days.

### **Premium for Night Work (Percentage of Hourly Pay)**

The premium for night work measures how much an employer must pay their employees if they are scheduled to work during a night shift. It is recorded as a percentage of the economy's minimum wage.

### **Premium for Work on Weekly Rest Day (Percentage of Hourly Pay)**

The premium for work on weekly rest day measures how much an employer must pay their employees if they are scheduled to work during a weekly rest day. It is recorded as a percentage of the city's minimum wage.

### **Premium for Overtime Work (Percentage of Hourly Pay)**

The premium for overtime work measures how much an employer must pay their employees if they are scheduled to work overtime. It is recorded as a percentage of the economy's minimum wage.

### **Paid Annual Leave Average for a Worker with 1, 5, and 10 Years of Tenure (in Working Days)**

The paid annual leave average is a group of three indicators: (i) paid annual leave for a worker with one year of tenure; (ii) paid annual leave for a worker with five years of tenure; and (iii) paid annual leave for a worker with 10 years of tenure. Paid annual leave is measured in working days. These indicators measure the number of paid leave days a worker with different employment tenures is eligible for.

### **Notice Period Average for 1, 5, and 10 Years of Tenure (in Weeks)**

The notice period average is a group of three indicators: (i) notice period for redundancy dismissal for a worker with one year of tenure; (ii) notice period for redundancy dismissal for a worker with five years of tenure; and (iii) notice period for redundancy dismissal for a worker with 10 years of tenure. Notice period requirements are measured in calendar weeks. These indicators measure the time an employer must provide an employee before dismissal due to redundancy.

### **Severance Pay Average for 1, 5, and 10 Years of Tenure (in Calendar Weeks)**

The severance pay average is a group of three indicators: (i) severance pay for redundancy dismissal for a worker with 1 year of tenure; (ii) severance pay for redundancy dismissal for a worker with 5 years of tenure; and (iii) severance pay for redundancy dismissal for a worker with 10 years of tenure. Severance pay requirements are measured in calendar weeks. These indicators measure the amount of weeks of pay an employer must provide an employee before immediate dismissal due to redundancy.

### **Minimum Length of Paid Maternity Leave (in Calendar Weeks)**

The minimum length of paid maternity leave measures how many weeks of paid leave an employer must provide an eligible worker who has taken maternity leave. It is measured in calendar weeks.

### **Wages Received on Maternity Leave**

The wages received on maternity leave measures how much an employer must pay an eligible worker who has taken maternity leave. It is measured as a percentage of hourly wages.

### **Average Unpaid Maternity and/or Sick Leave (in Calendar Weeks)**

The average unpaid maternity and/or sick leave is a group of two indicators: (i) minimum length of unpaid maternity leave; and (ii) minimum length of unpaid sick leave. It is measured in calendar weeks. This average measures how many unpaid weeks an employer must allow an employee to take from work for sick or maternity leave without compromising job security.

### **Paid Sick Leave (in Working Days)**

Paid sick leave measures the number of days per year an employer must provide an employee with paid sick leave. It is measured in working days.

## **How the Employing Workers Category is Ranked and Scored**

The Employing Workers category was ranked and scored using the following 13 variables:

<b>Topic and Indicator</b>	<b>Highest Performer</b>	<b>Lowest Performer</b>
Ratio of Annual Minimum Wage to Income per Capita	0.225	1.030+
Maximum Length of Probationary Period	1 month	16+ months
Maximum Number of Working Days per Week	7 days	5 days
Premium for Night Work (Percent of Hourly Pay)	100.00%	150.00%

<b>Topic and Indicator</b>	<b>Highest Performer</b>	<b>Lowest Performer</b>
Premium for Work on Rest Day (Percent of Hourly Pay)	100.00%	200.00%
Premium for Overtime Work (Percent of Hourly Pay)	100.00%	150.00%
Paid Annual Leave Average for 1, 5, and 10 Years of Tenure	0.00 days	16.67+ days
Notice Period Average for 1, 5, and 10 Years of Tenure	0.00 weeks	5.33+ weeks
Severance Pay Average for 1, 5, and 10 Years of Tenure	0.00 weeks	38.56+ weeks
Minimum Length of Paid Maternity Leave	0.00 weeks	10.25+ weeks
Wages Received on Maternity Leave	0.00%	150.00%
Average Unpaid Maternity Leave and/or Sick Leave (in Weeks)	0.00 weeks	13.43+ weeks
Paid Sick Leave (in Working Days)	0.00 days	8.15+ days

For each indicator, there is a top performer and a bottom performer. Economies with the best performance for a given indicator are awarded 10 “points,” or a score of 10. Cities at the level of bottom performance, or cities at or below two standard deviations from the mean, are awarded a score of 0. All the cities in between are scored based on their distance to the frontier. For each city, the number of awarded points across all indicators is aggregated, then divided by the number of indicators for which we had data. This is done because not all locations have complete data across all indicators, and doing so allows for all locations to be included in comparison.

For more information on how indicators, indexes, and groups are scored, how the ranking and scoring system for a category works, or how the overall Ease of Doing Business rank and score were derived, please read the first section of this methodology.

# Getting Electricity



## Methodology

### What does Getting Electricity measure?

*Doing Business North America* records all procedures required for a business to obtain a permanent electricity connection and supply for a standard commercial property. These procedures include: applications and contracts with electricity utilities, all necessary inspections and clearances from the distribution utility as well as other agencies, and the external and final connection works. The time to complete the necessary procedures listed above is also recorded.

In addition, *Doing Business North America* measures the cost of electricity in two ways: (i) the price of a kilowatt-hour (kWh) of electricity for use in a commercial property, and (ii) the annual cost of electricity used in a commercial property as a percentage of income per capita.

### Assumptions about the Property

To make the data comparable across economies, several assumptions about the property, the electricity connection, type of electricity, and consumption of energy are used.

#### The property:

- Is located in the economy's largest business city. For 14 of the largest economies, the data for multiple cities is collected.
- Is located in an area where similar commercial properties are typically located. In this area, a new electricity connection is not eligible for a special investment promotion regime.
- Is located in an area with no physical constraints. For example, the property is not near a railway.
- Is a new construction and is being connected to electricity for the first time.
- Operates 30 days a month from 9:00 a.m. to 5:00 p.m. with equipment utilized at 80% capacity on average and that there are no electricity cuts.

# Assumptions about the Electricity Connection, Type of Energy, and Consumption

## The electricity connection:

- Is a permanent one.
- The annual energy consumption is 322,560 kilowatt-hours (kWh); monthly energy consumption is 26,880 kWh; hourly consumption is 112 kWh.
- Prices of electricity are treated as constant throughout the course of a year; no seasonal, monthly, or day-time adjustments due to demand are applied.
- If multiple electricity suppliers exist, the property is served by the cheapest supplier.
- No renewable energy sources are used in electricity generation or electricity consumption. Secondary energy sources are used exclusively.
- No renewable energy tax incentives are considered or applied.

## Indicators

### Procedures to Obtain an Electricity Connection

A procedure is defined as any interaction of the company's employees or its main electrician or electrical engineer with external parties. Interactions between company employees and steps related to the internal electrical wiring, such as the design and execution of the internal electrical installation plans, are not counted as procedures. However, internal wiring inspections and certifications that are prerequisites to obtain a new connection are counted as procedures. Procedures that must be completed with the same utility but with different departments are counted as separate procedures.

A procedure is always counted for the external works – whether it is carried out by the utility or a private contractor. However, the external work procedure and the meter installation can be counted as one unique procedure, provided two specific conditions are met: (i) both the external works and meter installation are carried out by the same company or agency, and (ii) there is no additional interaction for the customer between the external works and the meter installation.

If an internal wiring inspection – or a related certification on the installation – is needed to obtain a new connection, then it is counted as a procedure. However, if an internal inspection and the meter installation occur (i) at the same time and (ii) without additional follow-up or through a separate request, then these are counted as one procedure.

### Time Required to Complete Each Procedure

Time is recorded in calendar days. The measure captures the duration that the electricity utility indicates is necessary in practice to complete a procedure with minimal follow-up and no extra payments. It is assumed that the minimum time required for each procedure is one day. Although procedures may take place simultaneously, they cannot start on the same day, unless procedures can be completed entirely online. It is assumed that the company does not waste time and commits to completing each remaining procedure without delay. The time that the company spends on gathering information is not taken into account. It is assumed that the company is aware of all electricity connection requirements and their sequence from the beginning.

## Price of Electricity Used in Commercial Property

*Doing Business North America* measures the price of electricity used by commercial properties in two ways. The first method looks at the cost of electricity for a single kilowatt-hour (kWh) measured in U.S. cents. It is important to note that a kilowatt-hour is a very small unit; it is assumed that the commercial property uses 112 kWh per hour, and 322,560 kWh per year.

This granular type of data provides the opportunity to calculate other means of representing the cost of electricity (such as the second approach used for this variable). However, the costs associated with completing the procedures necessary to connect a commercial property or warehouse to an electrical source are not recorded when using this new method. Important up-front and administrative costs are therefore not included in this version of the report.

The second approach looks at the annual cost of electricity as a percentage of the city's income per capita. The annual assumption of 322,560 kWh is used in this calculation, multiplied by the price of electricity mentioned above, all of which is divided by income per capita.

This second approach provides a perspective that allows for costs to be interpretable and transferable between *Doing Business North America* categories. For example, the cost of electricity can now be directly compared to the wage variables in *Employing Workers* category, or costs associated with the procedures required in the *Starting a Business* category.

## How the Getting Electricity Category is Ranked and Scored

The Getting Electricity category was ranked and scored using the following four indicators:

Topic and Indicator	Highest Performer	Lowest Performer
Procedures	4	6+
Time	44 days	89+ days
Cost (% of Income per Capita)	0.29%	15.01%
Cost (¢ per kWh)	3.30¢	33.40¢

For each indicator, there is a top performer and a bottom performer. Economies with the best performance for a given indicator are awarded 10 "points," or a score of 10. Cities at the level of bottom performance, or cities at or below two standard deviations from the mean, are awarded a score of 0. All the cities in between are scored based on their distance to the frontier. For each city, the number of awarded points across all indicators is aggregated, then divided by the number of indicators for which we had data. This is done because not all locations have complete data across all indicators, and doing so allows for all locations to be included in comparison.

For more information on how indicators, indexes, and groups are scored, how the ranking and scoring system for a category works, or how the overall *Ease of Doing Business* rank and score were derived, please read the first section of this methodology.

# Registering Property



## Methodology

### What does Registering Property measure?

*Doing Business North America* records the full sequence of procedures necessary for a business to purchase a property from another business and to transfer the property title to the buyer's name so that the buyer can use the property for: (i) expanding its business, (ii) collateral in taking new loans, or (iii) selling the property to another business.

The process of transferring property starts with preregistration procedures, including: (i) obtaining the necessary documents, such as a copy of the seller's title if necessary; and (ii) conducting due diligence if required. The transaction is considered complete when it is opposable to third parties and when the buyer can use the property, use it as collateral for a bank loan, or resell it. Every procedure required by law or necessary in practice is included, whether it is the responsibility of the seller or the buyer or must be completed by a third party on their behalf.

*Doing Business North America* also measures the time and cost to complete each of these procedures. Finally, there is also a measure of the quality of the land administration system in each economy. The Quality of Land Administration Index is comprised of two sub-indexes: the Reliability of Infrastructure index and a Transparency of Information index.

### Assumptions about the Parties

To make the data comparable across economies, several assumptions about the parties to the transaction, the property, and the procedures are used.

**The parties:**

- Are limited liability companies (or the legal equivalent).
- Are located in the urban area of the economy's largest business city. For 14 of the largest economies, the data for multiple cities is collected.
- Are 100% domestically and privately owned.
- Perform no special purposes other than general commercial activities.

**Assumptions about the Property****The property:**

- Has a value of two times medium household income, which equals the sale price.
- Is fully owned by the seller.
- Has no mortgages attached and has been under the same ownership for the past 10 years.
- Is registered in the land registry and is free of title disputes.
- Is located in an urban commercial zone, and no rezoning is required.
- Has no trees, natural water sources, natural reserves, or historical monuments of any kind.
- Will not be used for special purposes, and no special permits, such as for residential use, industrial plants, waste storage, or certain types of agricultural activities, are required.
- Has no occupants, and no other party holds a legal interest in it.

**Indicators****Number of Forms to Legally Transfer Title on Immovable Property**

The forms to legally transfer title on immovable property is measured by the number of documents required to complete all pre- and post-transfer procedures. This can include a myriad of different forms of documentation, including items such as: (i) preliminary change of ownership forms, (ii) the deed, (iii) property disclosure forms, (iv) state and city excise tax forms, (v) transmittal forms, stamp tax forms, etc., among other forms. The objective of this indicator is to measure how much necessary administrative documentation is required during the process of transferring title on immovable property.

**Time Required to Process the Deed**

The time required to process the deed measures the length of time it takes for the agency in charge of immovable property registration to process the transfer of title from the buyer to the seller. It is recorded in calendar days. The deed is assumed to be the primary document required during the transfer of title, and is used as the representative document for all measurements related to time and cost. In cases where the agency in charge of immovable property registration commits to a specific time frame, that time frame is used to represent the time required to process the deed.

**Cost Required to Process the Deed**

The cost required to process the deed measures the financial burden required to process the transfer of title from the buyer to the seller. It is recorded in United States dollars. The deed is assumed to be the primary document required during the transfer of title, and is used as the representative document for all measurements related to time and cost.

### **Quality of Land Administration Index (Scale: 0 – 8)**

The Quality of Land Administration Index is the summation of the Reliability of Infrastructure and Transparency of Information indexes. The index values range from 0 to 8, with higher values indicating a better quality of land administration system.

### **Reliability of Infrastructure Index (Scale: 0 – 2)**

The Reliability of Infrastructure Index has two components:

- How land titles are kept at the registry. A score of 1 is assigned if the majority of land titles are fully digital; a score of 0.5 is assigned if the majority are scanned; a score of 0 is assigned if the majority are kept in paper format.
- How immovable property is identified. A score of 1 is assigned if there is a unique number to identify properties for the majority of land plots; a score of 0 is assigned if there are multiple identifiers.

The index ranges from 0 to 2, with higher values indicating a higher quality of infrastructure for ensuring the reliability of information on property titles and boundaries.

### **Transparency of Information Index (Scale: 0 – 6)**

The Transparency of Information Index has six components:

- Whether information on land ownership is made publicly available. A score of 1 is assigned if information on land ownership is accessible by anyone; a score of 0 is assigned if access is restricted.
- Whether the list of documents required for completing the registration of property transactions is made publicly available. A score of 1 is assigned if the list of documents is accessible online or on a public board; a score of 0 is assigned if it is not made available to the public or if it can be obtained only in person.
- Whether the fee schedule for completing the registration of property transactions is made publicly available. A score of 1 is assigned if the fee schedule is accessible online or on a public board free of charge; a score of 0 is assigned if it is not made available to the public or if it can be obtained only in person.
- Whether the agency in charge of immovable property registration commits to a specific time frame for delivering a legally binding document that proves property ownership. A score of 1 is assigned if the service standard is accessible online or on a public board; a score of 0 is assigned if it is not made available to the public or if it can be obtained only in person.
- Whether there is a specific and independent mechanism for filing complaints about a problem that occurred at the agency in charge of immovable property registration. A score of 1 is assigned if there is a specific and independent mechanism for filing a complaint; a score of 0 is assigned if there is only a general mechanism or no mechanism.
- Whether the deed required to legally transfer title on immovable property can be processed online. A score of 1 is assigned if the deed is able to be processed online (such as through eRecording); a score of 0 is assigned if the deed must be processed in person.

The index ranges from 0 to 6, with higher values indicating greater transparency in the land administration system.

## How the Registering Property Category is Ranked and Scored

The 'Registering Property' category was ranked and scored using the following four variables:

Topic and Indicator	Highest Performer	Lowest Performer
Number of Forms to Transfer Title on Immovable Property	1	6+
Time to Process Deed (in Calendar Days)	1	60
Cost to Process Deed (in United States Dollars)	\$10.00	\$260.00
Quality of Land Administration Index (Scale 0 – 8)	8	3

For each indicator, there is a top performer and a bottom performer. Economies with the best performance for a given indicator are awarded 10 “points,” or a score of 10. Cities at the level of bottom performance, or cities at or below than two standard deviations from the mean, are awarded a score of 0. All the cities in between are scored based on their distance to the frontier. For each city, the number of awarded points across all indicators is aggregated, then divided by the number of indicators for which we had data. This is done because not all locations have complete data across all indicators, and doing so allows for all locations to be included in comparison.

For more information on how indicators, indexes, and groups are scored, how the ranking and scoring system for a category works, or how the overall Ease of Doing Business rank and score were derived, please read the first section of this methodology.

# Paying Taxes



## Methodology

### What does Paying Taxes Measure?

*Doing Business North America* measures all taxes that are mandated at any level of government (including federal, state/province, and city). Indicators related to personal, corporate, and commercial property tax rates are collected to provide a full spectrum of taxes that businesses, employers, employees, and city residents can expect to pay.

### Assumptions about the Individual and the Business

Due to the complexity of local tax systems, and to make the data comparable across economies, several assumptions about the business and the taxes and contributions are used.

#### The individual:

- Has annual income of one times the city's average household income.

#### The business:

- Is in its second year of operation.
- Does not qualify for investment incentives or any benefits apart from those related to the age or size of the company.
- Has revenue of two times the city's average household income.

#### Assumptions about Taxes

- All the taxes and contributions recorded are those paid in the second year of operation.

### Indicators

#### Total Personal Income Tax Rate

The total personal income tax rate is a group of indexes that measure taxes levied on an individual's income. It is comprised of three indicators: (i) the federal personal income tax rate, (ii) the state (or province) personal income tax rate, and (iii) the city personal income tax rate. It is assumed that an individual has annual earnings equal to that of one times the local average household income for determining the appropriate tax bracket in cases where a progressive tax system is used. The statutory tax rate that would apply to that income level is recorded (i.e., this is not meant to be an effective tax).

### **Total Corporate Income Tax Rate**

The total corporate income tax rate is a group of indexes that measure taxes levied on a corporation's income. It is comprised of three indicators: (i) the federal corporate income tax rate, (ii) the state (or province) corporate income tax rate, and (iii) the city corporate income tax rate. It is assumed that the corporation has annual earnings equal to that of two times the local average household income for determining the appropriate tax bracket in cases where a progressive tax system is used. The statutory tax rate that would apply to that income level is recorded (i.e., this is not meant to be an effective tax).

### **Total Gross Receipts Tax Rate**

The total gross receipts tax rate is a group of indexes that measure taxes levied on a corporation's receipts. It is comprised of the three indicators that measure statutory tax rates: (i) the federal gross receipts tax rate, (ii) the state (or province) gross receipts tax rate, and (iii) the city gross receipts tax rate.

### **Commercial Property Effective Tax Rate**

The commercial property effective tax rate measures annual taxes levied against commercial property. It is measured as a percentage of total commercial property value. Commercial property tax rates are calculated by using the local mill rate for a property and the local assessment ratio.

## **How the Paying Taxes Category is Ranked and Scored**

The 'Paying Taxes' category was ranked and scored using the following four variables:

<b>Topic and Indicator</b>	<b>Highest Performer</b>	<b>Lowest Performer</b>
Total Personal Income Tax Rate	22.00%	58.66%+
Total Corporate Income Tax Rate	9.00%	40.00%+
Total Gross Receipts Tax Rate	0.00%	3.28%+
Commercial Property Effective Tax Rate	0.257%	3.80%

For each indicator, there is a top performer and a bottom performer. Economies with the best performance for a given indicator are awarded 10 "points," or a score of 10. Cities at the level of bottom performance, or cities at or below two standard deviations from the mean, are awarded a score of 0. All the cities in between are scored based on their distance to the frontier. For each city, the number of awarded points across all indicators is aggregated, then divided by the number of indicators for which we had data. This is done because not all locations have complete data across all indicators, and doing so allows for all locations to be included in comparison.

For more information on how indicators, indexes, and groups are scored, how the ranking and scoring system for a category works, or how the overall Ease of Doing Business rank and score were derived, please read the first section of this methodology.

# Resolving Insolvency



## Methodology

### What does Resolving Insolvency measure?

*Doing Business North America* studies the time, cost, and outcome of insolvency proceedings involving domestic entities as well as the strength of the legal framework applicable to judicial liquidation and reorganization proceedings. Indicators related to time and the strength of the legal framework index are used to calculate the regulatory performance for resolving insolvency.

To make the data on the time, cost, and outcome of insolvency proceedings comparable across economies, several assumptions about the business and the case are used.

### Assumptions about the Business and Parties

#### The business:

- Is a limited liability company.
- Has a 10-year loan agreement with a domestic bank secured by a mortgage over the real estate property.
- Has a market value, operating as a going concern, of five times income per capita or \$200,000, whichever is greater.

#### The parties:

The bank wants to recover as much as possible of its loan, as quickly and cheaply as possible. The unsecured creditors will do everything permitted under the applicable laws to avoid a piecemeal sale of the assets. The majority shareholder wants to keep the company operating and under their control. Management wants to keep the company operating and preserve its employees' jobs. All the parties are local entities or citizens; no foreign parties are involved.

## Indicators

### Time (in Years)

Time for creditors to recover their credit is recorded in calendar years. The period of time measured by *Doing Business North America* is from the company's default until the payment of some or all of the money owed to the bank.

### Strength of Insolvency Framework Index (Scale: 0 – 16)

The strength of insolvency framework index is constructed using four other indexes: (i) the commencement of proceedings index, (ii) the management of debtor's assets index, (iii) the reorganization proceedings index, and (iv) the creditor participation index.

The index ranges from zero to 16, with higher values indicating insolvency legislation that is better designed for rehabilitating viable firms and liquidating nonviable ones.

### Commencement of Proceedings Index (Scale: 0 – 3)

The commencement of proceedings index has three components:

- Whether debtors can initiate both liquidation and reorganization proceedings. A score of 1 is assigned if debtors can initiate both types of proceedings; a score of 0.5 is assigned if they can initiate only one of these types; a score of 0 is assigned if they cannot initiate insolvency proceedings.
- Whether creditors can initiate both liquidation and reorganization proceedings. A score of 1 is assigned if creditors can initiate both types of proceedings; a score of 0.5 is assigned if they can initiate only one of these types (either liquidation or reorganization); a score of 0 is assigned if they cannot initiate insolvency proceedings.
- What standard is used for commencement of insolvency proceedings. A score of 1 is assigned if a liquidity test is used; a score of 0.5 is assigned if the balance sheet test is used; a score of 1 is assigned if both the liquidity and balance sheet tests are available but only one is required to initiate insolvency proceedings; a score of 0.5 is assigned if both tests are required; a score of 0 is assigned if a different test is used.

The index ranges from 0 to 3, with higher values indicating greater access to insolvency proceedings.

### Management of Debtor's Assets Index (Scale: 0 – 6)

The management of debtor's assets index has six components:

- Whether the debtor can continue performing contracts essential to the debtor's survival. A score of 1 is assigned if yes; a score of 0 is assigned if continuation of contracts is not possible or if the law contains no provisions on this subject.
- Whether the debtor (or an insolvency representative on its behalf) can reject overly burdensome contracts. A score of 1 is assigned if yes; a score of 0 is assigned if rejection of contracts is not possible or if the law contains no provisions on this subject.
- Whether transactions entered into before commencement of insolvency proceedings that give preference to one or several creditors can be avoided after proceedings are initiated. A score of 1 is assigned if yes; a score of 0 is assigned if avoidance of such transactions is not possible or if the law contains no provisions on this subject.
- Whether undervalued transactions entered into before commencement of insolvency proceedings

can be avoided after proceedings are initiated. A score of 1 is assigned if yes; a score of 0 is assigned if avoidance of such transactions is not possible or if the law contains no provisions on this subject.

- Whether the insolvency framework includes specific provisions that allow the debtor (or an insolvency representative on its behalf), after commencement of insolvency proceedings, to obtain financing necessary to function during the proceedings. A score of 1 is assigned if yes; a score of 0 is assigned if obtaining post-commencement financing is not possible or if the law contains no provisions on this subject.
- Whether post-commencement financing receives priority over ordinary unsecured creditors during distribution of assets. A score of 1 is assigned if yes; a score of 0.5 is assigned if post-commencement financing is granted super-priority over all creditors, secured and unsecured; a score of 0 is assigned if no priority is granted to post-commencement financing or if the law contains no provisions on this subject.

The index ranges from 0 to 6, with higher values indicating more advantageous treatment of the debtor's assets from the perspective of the company's stakeholders.

### **Reorganization Proceedings Index (Scale: 0 – 3)**

The reorganization proceedings index has three components:

- Whether the reorganization plan is voted on only by the creditors whose rights are modified or affected by the plan. A score of 1 is assigned if yes; 0.5 if all creditors vote on the plan, regardless of its impact on their interests; 0 if creditors do not vote on the plan or if reorganization is not available.
- Whether creditors entitled to vote on the plan are divided into classes, each class votes separately and the creditors within each class are treated equally. A score of 1 is assigned if the voting procedure has these three features; 0 if the voting procedure does not have these three features or if reorganization is not available.
- Whether the insolvency framework requires that dissenting creditors receive as much under the reorganization plan as they would have received in liquidation. A score of 1 is assigned if yes; 0 if no such provisions exist or if reorganization is not available.

The index ranges from 0 to 3, with higher values indicating greater compliance with internationally accepted practices.

### **Creditor Participation Index (Scale: 0 – 4)**

The creditor participation index has four components:

- Whether creditors appoint the insolvency representative or approve, ratify or reject the appointment of the insolvency representative. A score of 1 is assigned if yes; 0 if no.
- Whether creditors are required to approve the sale of substantial assets of the debtor in the course of insolvency proceedings. A score of 1 is assigned if yes; 0 if no.
- Whether an individual creditor has the right to access financial information about the debtor during insolvency proceedings. A score of 1 is assigned if yes; 0 if no.
- Whether an individual creditor can object to a decision of the court or of the insolvency representative to approve or reject claims against the debtor brought by the creditor itself and by other creditors. A score of 1 is assigned if yes; 0 if no.

The index ranges from 0 to 4, with higher values indicating greater participation of creditors.

## How the Resolving Insolvency Category is Ranked and Scored

The 'Resolving Insolvency' category was ranked and scored using the following two indicators:

Topic and Indicator	Highest Performer	Lowest Performer
Time (in Years)	0.80 years	1.80 years
Strength of Insolvency Framework Index (Scale: 0 – 16)	15 points	11 points

For each indicator, there is a top performer and a bottom performer. Economies with the best performance for a given indicator are awarded 10 “points,” or a score of 10. Cities at the level of bottom performance, or cities at or below two standard deviations from the mean, are awarded a score of 0. All the cities in between are scored based on their distance to the frontier. For each city, the number of awarded points across all indicators is aggregated, then divided by the number of indicators for which we had data. This is done because not all locations have complete data across all indicators, and doing so allows for all locations to be included in comparison.

For more information on how indicators, indexes, and groups are scored, how the ranking and scoring system for a category works, or how the overall Ease of Doing Business rank and score were derived, please read the first section of this methodology appendix.