

INTERNATIONAL PUBLIC
OPINION ON CLIMATE CHANGE

Household Climate Actions: Adoption and Barriers

2023



YALE PROGRAM ON
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Communication



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Introduction

This report presents results from an international survey, conducted in a partnership between the Yale Program on Climate Change Communication (YPCCC), Data for Good at Meta, and Rare’s Center for Behavior & the Environment, investigating public climate change knowledge, beliefs, attitudes, policy preferences, and behavior among Facebook users. The survey included responses from 139,136 Facebook monthly active users (18 years of age or older). Responses were collected from 187 countries and territories worldwide.

This report is based on data from the subset of countries and territories within the survey that are classified as “high-emissions” based on both their above-average CO₂ per capita emission levels and higher per capita income. This subset includes 37 countries and territories, with a total of 39,683 respondents. Interview dates: August 3 – September 3, 2023. The YPCCC research team was supported by the MacArthur Foundation, the Schmidt Family Foundation, and King Philanthropies.

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Executive Summary

This report describes public adoption of behaviors to reduce the carbon emissions that cause climate change, and the reasons why people might have difficulty adopting those behaviors (i.e., “barriers”). We surveyed Facebook users in 37 countries and territories that are classified as “high-emissions” based on both their above-average CO₂ emission levels and higher per capita income. The survey was developed by the Yale Program on Climate Change Communication, Data for Good at Meta, and Rare’s Center for Behavior & the Environment, and was fielded by Meta from August 3 – September 3, 2023.

Overall, the repeated low-cost behaviors (such as reducing food waste and meat consumption) are much more common than behaviors that need only be performed once but have a large initial cost (such as converting to heat pumps and purchasing electric vehicles). Respondents who have not done the lower-cost behaviors are more likely to say they have not done so due to lack of awareness or not having thought about the behavior. Respondents who have not done the higher-cost behaviors are more likely to say that the behaviors are too expensive or do not meet their household needs. However, many respondents who *have* done these behaviors say they faced minimal difficulty in doing so.

Among the key findings by type of behavior:

Reducing Food Waste

- 66% of respondents overall said they had tried to reduce their food waste in the prior month, including majorities (more than 50%) in 36 out of 37 surveyed countries and territories.
- Across nearly all countries and territories, most respondents who said they had reduced food waste in the prior month said they did not face any difficulties doing so.
- Among those who said they had *not* tried to reduce food waste in the prior month, the most common barriers were that they had never thought about trying to reduce their food waste, did not know how, or were not interested in doing it.

Reducing Meat Consumption

- 39% of respondents overall said they had tried to eat less meat in the prior month, including majorities of respondents in 3 out of 37 surveyed countries and territories.
- Among respondents who said they had tried to reduce their meat consumption in the prior month, majorities in most countries and territories (24 out of 37) said they did not have any difficulties doing so. When respondents did name difficulties, they were most likely to say that they had concerns about their health, that it was expensive, or that they liked eating meat.
- Among those who said they had *not* tried to reduce their meat consumption in the prior month, the most common barriers were that they like eating meat, were not interested in doing it, or had never thought about eating less meat.

Buying Carbon Offsets

- 16% of respondents said they had ever bought carbon offsets, which fund projects that reduce carbon (such as planting trees). No country or territory had a majority of respondents who said they had ever bought carbon offsets. Among respondents who said they had ever bought carbon offsets, majorities in 22 out of 37 countries and territories said they did not have any difficulties

doing so. When respondents did name difficulties, they were most likely to say that they did not know which offsets were credible, that they did not know how to buy carbon offsets, or that it was expensive.

- Among those who said they had *never* bought carbon offsets, the most common barriers were that they had never heard of carbon offsets, were not interested, or had never thought about buying carbon offsets.

Installing a Household Heat Pump

- 12% of respondents said they had converted their household heating and cooling to a heat pump (a device that uses electricity more efficiently to heat and cool homes by transferring heat from one place to another). No country or territory had a majority of respondents who said they had converted their household heating and cooling to a heat pump.
- Among respondents who said they had converted their household heating and cooling to a heat pump, majorities in 20 out of 37 countries and territories said they did not have any difficulties doing so. When respondents did name difficulties, they were most likely to say that it is expensive, that they did not know how to convert to a heat pump, or that it is cold where they live.
- Among those who said they had *not* converted their household heating and cooling to a heat pump, the most common barriers were that they do not own their home, or that it is too expensive. Many respondents also said that their home is not suitable, or that they have never heard of heat pumps.

Installing Rooftop Solar Panels

- 9% of respondents said they had converted their household electricity to come from rooftop solar panels. No country or territory had a majority of respondents who said they had converted their household electricity to come from rooftop solar panels.
- Among respondents who said they had converted their household electricity to come from rooftop solar panels, majorities in 21 out of 37 surveyed countries and territories said they did not have any difficulties doing so. When respondents did name difficulties, they were most likely to say that it was expensive, that they did not know how to convert to rooftop solar panels, or that it took a lot of time.
- Among those who said they had *not* converted their electricity to come from rooftop solar panels, the most common barriers were that it is too expensive, that they do not own their home, or that their home is not suitable.

Buying or Leasing an Electric Vehicle

- 7% of respondents said they have owned or leased an electric car or truck. No country or territory had a majority of respondents who said they had done so.
- Among respondents who said they had owned or leased an electric car or truck, majorities in 11 out of 37 surveyed countries and territories said they did not have any difficulties doing so. When respondents did name difficulties, they were most likely to say that it was expensive, that

they were not interested, or that they thought electric cars or trucks could not travel far enough without having to recharge.

- Among those who said they had *not* owned or leased an electric car or truck, the most common barriers were that it is too expensive, that electric cars or trucks cannot travel far enough without having to recharge, or that they are not interested in doing so.

1. Adoption of Behaviors That Limit Climate Change

Respondents were asked whether they had engaged in six behaviors (each of which can reduce carbon emissions): reducing food waste, reducing meat consumption, buying carbon offsets, installing a heat pump, installing rooftop solar panels, or buying or leasing an electric vehicle.¹ Overall, the behaviors that have a lower initial cost (such as reducing food waste and meat consumption) are much more common than behaviors that entail large initial cost (such as converting to heat pumps and purchasing electric vehicles).

Across all countries and territories surveyed, respondents were most likely to say they had tried to reduce their food waste in the prior month, with about two-thirds of respondents (66%) saying they had done so. An additional 7% said they had not done this but wanted to. Eighteen percent said they had not done this, while 8% said this behavior was not applicable to them.

Respondents were next most likely to say they had tried to eat less meat in the prior month, with 39% of respondents saying they had done so. An additional 6% said they had not tried to eat less meat but wanted to, while 45% said they had not done this, and 9% said this behavior was not applicable to them.

Adoption rates were lower for all other behaviors included in the study. Sixteen percent of respondents said they had ever bought carbon offsets, which fund projects that reduce carbon (such as planting trees), while 7% said they had not done this but wanted to, 60% said they had never done this, and 16% said this behavior was not applicable to them.

About one in ten respondents (12%) said they had converted their household heating and cooling to a heat pump (a device that uses electricity more efficiently to heat and cool homes by transferring heat from one place to another), while 8% said they had not done this but wanted to, 57% said they had not done this, and 22% said this behavior was not applicable to them.

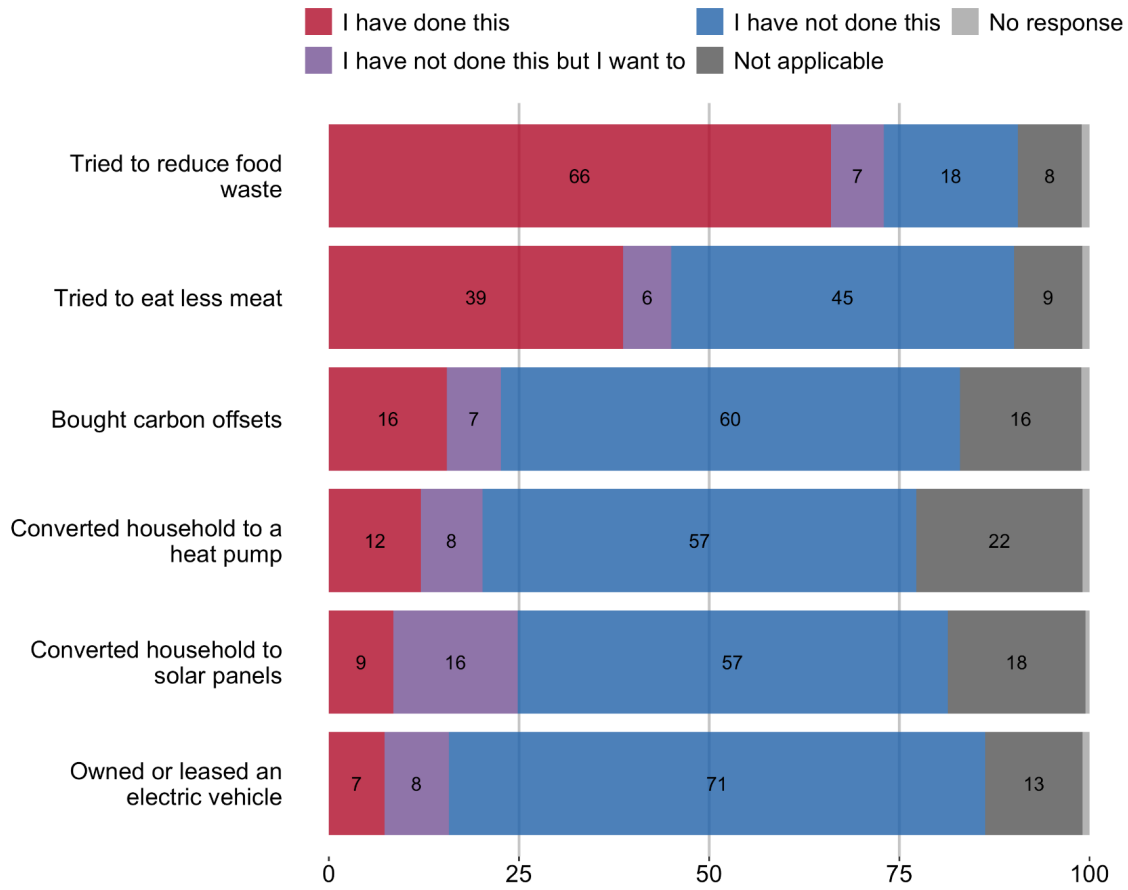
Nine percent of respondents said they had converted their household electricity to come from rooftop solar panels, while 16% said they had not done this but wanted to (the highest percentage for this response across the six behaviors), 57% said they had not done this, and 18% said this behavior was not applicable to them.

Finally, 7% of respondents said they have owned or leased an electric car or truck, while 8% said they have not done this but want to, 71% said they have not done this, and 13% say this behavior was not applicable to them.

Adoption rates for each behavior for each country and territory surveyed are summarized in the sections that follow and are presented in full in Appendix II (p. 40).

¹ Note that the survey questions did not tell respondents that these behaviors were relevant to reducing carbon emissions. Additionally, these questions were asked *before* the questions about respondents' climate change beliefs and attitudes (as described in "[International Public Opinion on Climate Change, 2023](#)").

Adoption of Behaviors That Limit Climate Change



Question Texts:

- In the last month have you tried to reduce your food waste?
- In the last month have you tried to eat less meat?
- Have you ever bought carbon offsets, which fund projects that reduce carbon (e.g., planting trees)?
- Have you converted your household heating and cooling to a heat pump (a device that uses electricity more efficiently to heat and cool homes by transferring heat from one place to another)?
- Have you converted your household electricity to come from rooftop solar panels?
- Have you owned or leased an electric car or truck?

Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare's Center for Behavior & the Environment; 2023

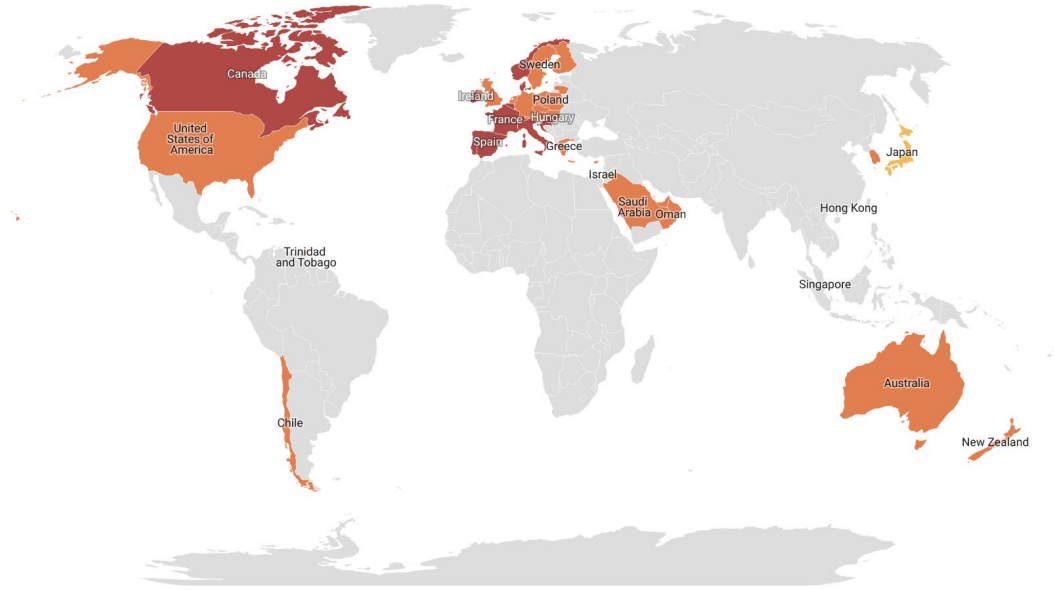
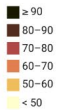
2. Reducing Food Waste

2.1. Majorities of respondents in most countries and territories said they had tried to reduce food waste.

A majority of respondents (more than 50%) in 36 out of 37 surveyed countries and territories said they had tried to reduce their food waste in the prior month. Respondents in France (79%), Croatia (78%), and Italy (77%) were the most likely to say so, while respondents in the United States (60%), Japan (55%), and Israel (43%) were the least likely.

Tried to reduce food waste

% who say they have tried to reduce their food waste in the last month



Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare's Center for Behavior & the Environment; 2023 • Created with Datawrapper

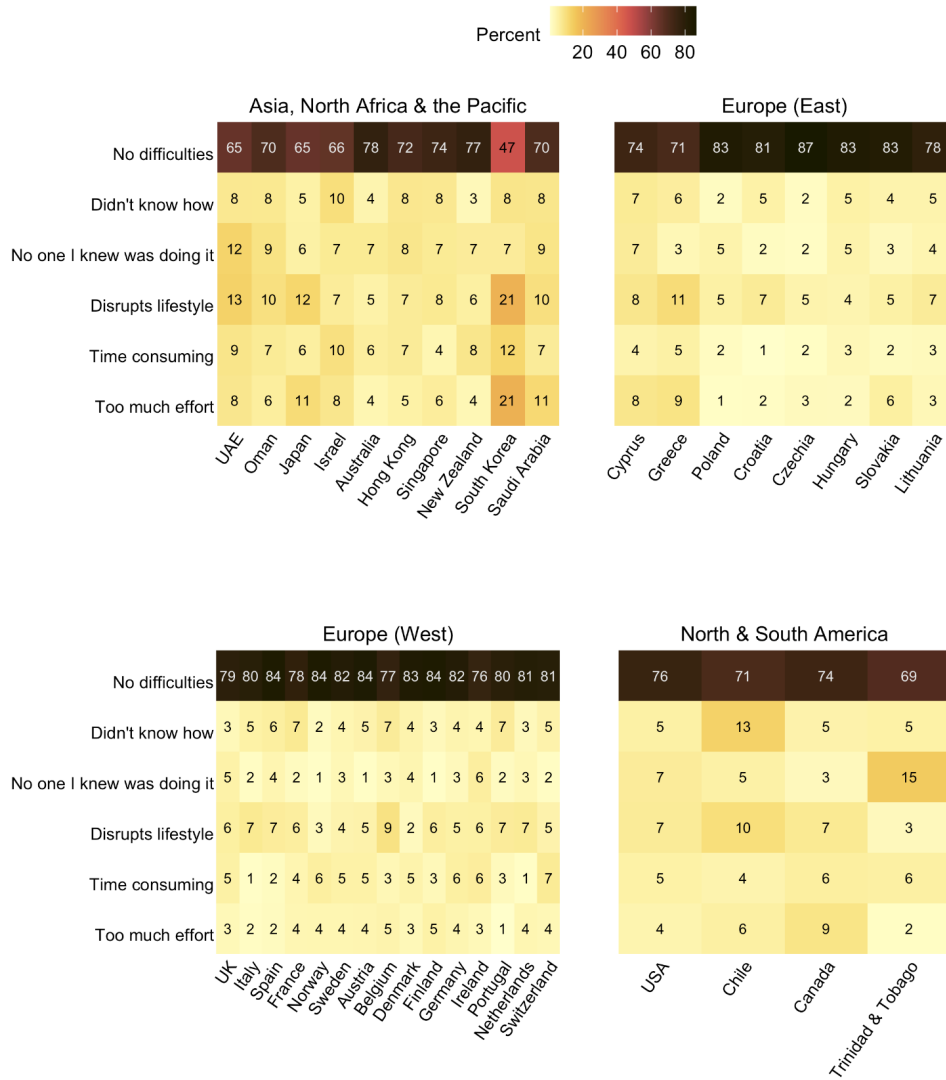
2.2. Most respondents who had tried to reduce food waste in the prior month said they faced no difficulties doing so.

Among respondents who said they had tried to reduce food waste in the prior month, majorities in nearly all countries and territories said they did not have any difficulties doing so. Respondents in Europe were most likely to say they had not had difficulties, with large majorities saying so in Czechia (87%), and in Spain, Austria, Norway, and Finland (all 84%). The only country where fewer than 50% of respondents said they did not face any difficulties in reducing their food waste was South Korea (47%).

However, other respondents who had adopted this behavior did report facing some difficulties. South Korea (21%), the United Arab Emirates (13%), and Japan (12%) had the largest percentages of respondents who said they thought the changes to their shopping routines would disrupt their lifestyle.² South Korea (21%), Japan (11%), and Saudi Arabia (11%) had the largest percentages who said they thought it would take too much effort. Trinidad & Tobago (15%), the United Arab Emirates (12%), and Oman (9%) had the largest percentages who said that no one they knew was trying to reduce their food waste. Chile (13%) and Israel (10%) had the largest percentages who said that they did not know how to reduce their food waste. Finally, South Korea (12%), Israel (10%), and New Zealand (8%) had the largest percentages who said that it took a lot of time to reduce their food waste.

² Respondents were allowed to select more than one answer to this question, unless they selected “I didn’t have any difficulties.”

Difficulties experienced by those who have reduced food waste



Did any of the following things make it difficult for you to reduce your food waste? Select all that apply.

Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare's Center for Behavior & the Environment; 2023

2.3. Among those who had not tried to reduce food waste, the most common barriers were not having thought about it, not knowing how, or not being interested.

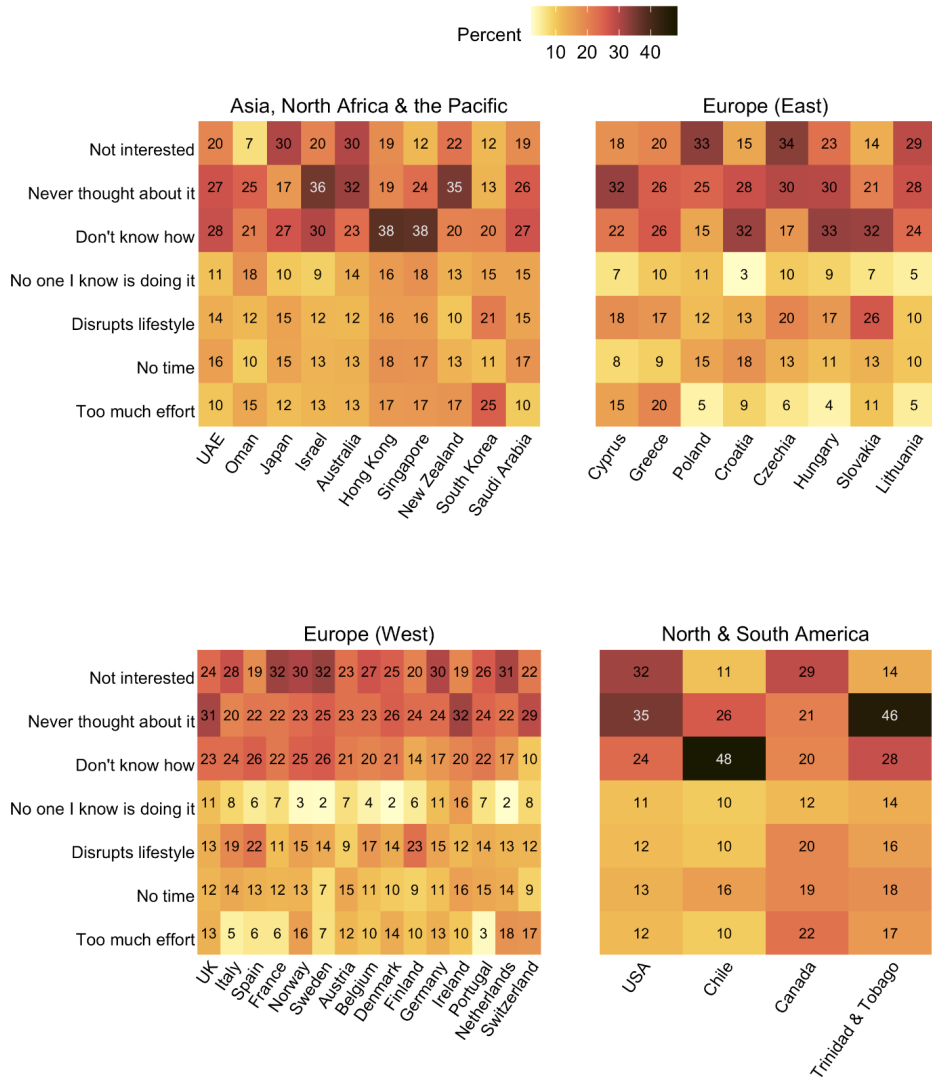
Among those who said they had *not* tried to reduce food waste in the prior month, the most common reasons for not doing so (i.e., “barriers”) were that they had never thought about trying to reduce their food waste, did not know how, or were not interested in doing it.³

Respondents in Trinidad & Tobago (46%), Israel (36%), and New Zealand and the United States (both 35%) were most likely to say that they had never thought about trying to reduce their food waste. Respondents in Chile (48%), and Hong Kong and Singapore (both 38%) were most likely to say they did not know how to reduce their food waste. Respondents in Czechia (34%), Poland (33%), and the United States (32%) were most likely to say they were not interested in doing this.

Among other barriers to reducing food waste, Slovakia (26%), Finland (23%), and Spain (22%) had the largest percentages of respondents who said the changes to their shopping routine would disrupt their lifestyle. South Korea (25%), Canada (22%), and Greece (20%) had the largest percentages who said reducing food waste is too much effort. Canada (19%), and Trinidad & Tobago, Croatia, and Hong Kong (all 18%) had the largest percentages who said they do not have time. Finally, Oman and Singapore (both 18%), and Hong Kong and Ireland (both 16%) had the largest percentages who said that no one they know is trying to reduce their food waste.

³ Respondents were allowed to select more than one answer to this question.

Perceived barriers to reducing food waste among non-adopters



Which of the following would make it difficult for you to reduce your food waste? Select all that apply.

Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare's Center for Behavior & the Environment; 2023

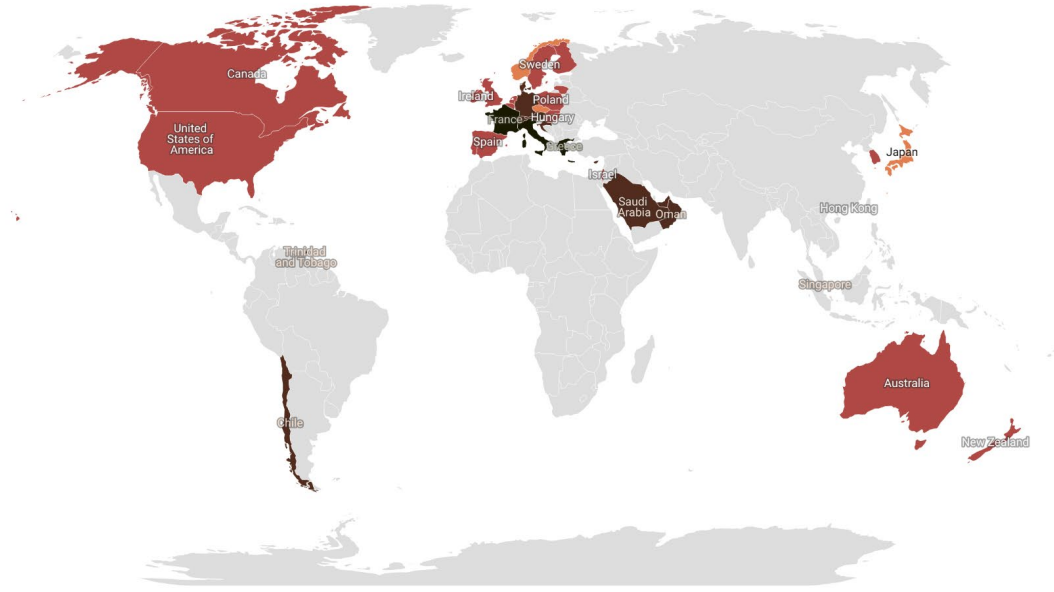
3. Reducing Meat Consumption

3.1. Relatively few respondents overall said they had tried to reduce meat consumption, though majorities did in a few countries.

A majority of respondents in 3 out of 37 surveyed countries and territories said they had tried to reduce their meat consumption in the prior month. Respondents in Italy (59%), Greece (57%), and France (55%) were the most likely to say so, while respondents in Norway (27%), Czechia (25%), and Japan (23%) were the least likely to say so.

Tried to eat less meat

% who say they have tried to eat less meat in the last month



Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare's Center for Behavior & the Environment, 2023 • Created with Datawrapper

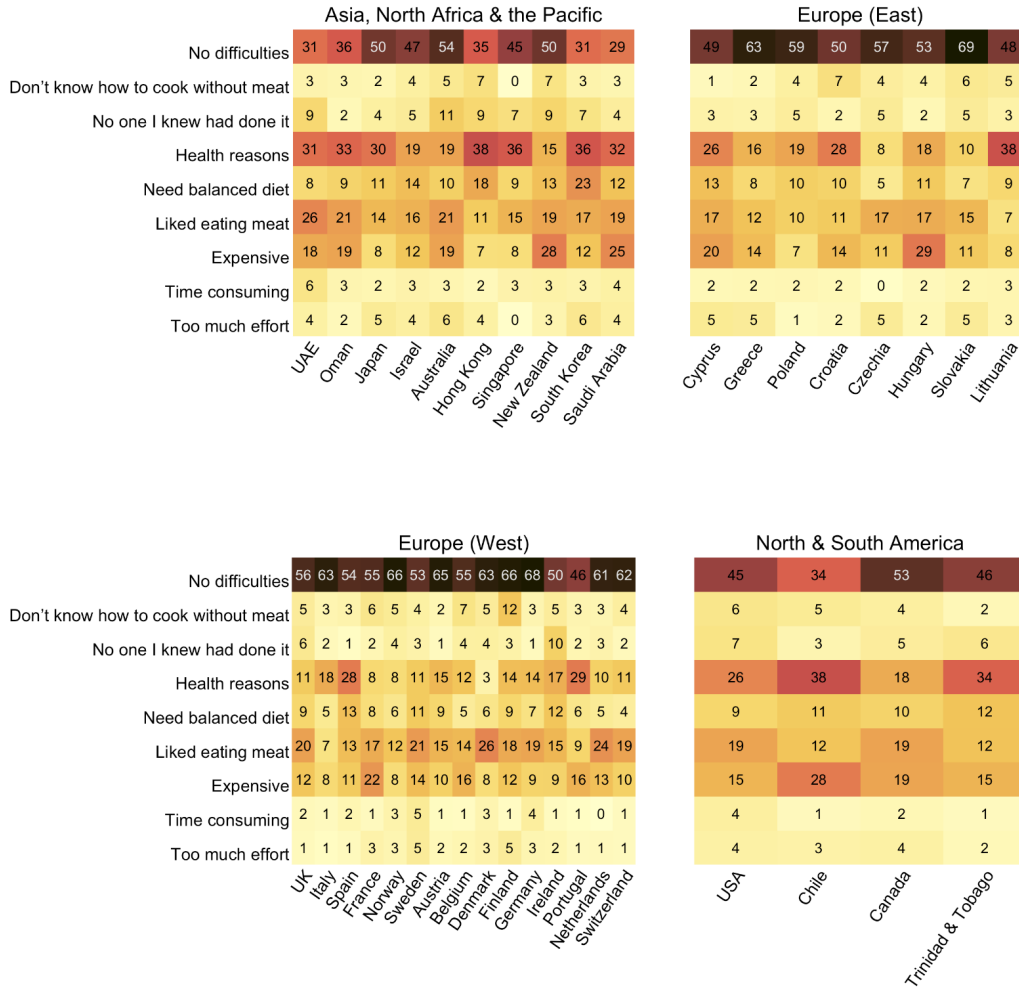
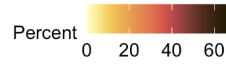
3.2. Most respondents who had tried to reduce their meat consumption in the past month said they faced no difficulties doing so.

Among respondents who said they had tried to reduce meat consumption in the prior month, majorities in most countries and territories (24 out of 37) said they did not have any difficulties doing so. Respondents in Europe were most likely to say they did not have difficulties, with respondents in Slovakia (69%), Germany (68%), and Finland and Norway (both 66%) most likely to say so. Respondents who reduced their meat consumption were least likely to say they did not face any difficulties in South Korea (31%), the United Arab Emirates (31%), and Saudi Arabia (29%), meaning that they were most likely to say they faced *some* difficulties.

Respondents in Asia, North Africa, and North and South America were more likely to say that they faced some difficulties reducing their meat consumption. Chile, Hong Kong, and Lithuania (all 38%) had the largest percentages of respondents who said they had concerns about their health.⁴ Hungary (29%), and Chile and New Zealand (both 28%) had the largest percentages who said it was expensive. Denmark (26%), the United Arab Emirates (26%), and the Netherlands (24%) had the largest percentages who said that they liked eating meat. South Korea (23%), Hong Kong (18%), and Israel (14%) had the largest percentages who said they thought it would be difficult to have a balanced diet without meat. Australia (11%) and Ireland (10%) had the largest percentages who said no one they knew was trying to eat less meat. Finland (12%), followed by Hong Kong, New Zealand, Croatia, and Belgium (all 7%) had the largest percentages who said they didn't know how to cook meals without meat. Australia and South Korea (both 6%) had the largest percentages who said they thought it would take too much effort. Finally, the United Arab Emirates (6%) and Sweden (5%) had the largest percentages who said it took a lot of time.

⁴ Respondents were allowed to select more than one answer to this question, unless they selected "I didn't have any difficulties."

Difficulties experienced by those who have eaten less meat



Did any of the following things make it difficult for you to eat less meat? Select all that apply.

Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare's Center for Behavior & the Environment; 2023

3.3. Among those who had not tried to reduce their meat consumption, the most common barriers were liking eating meat, not being interested, or never having thought about it.

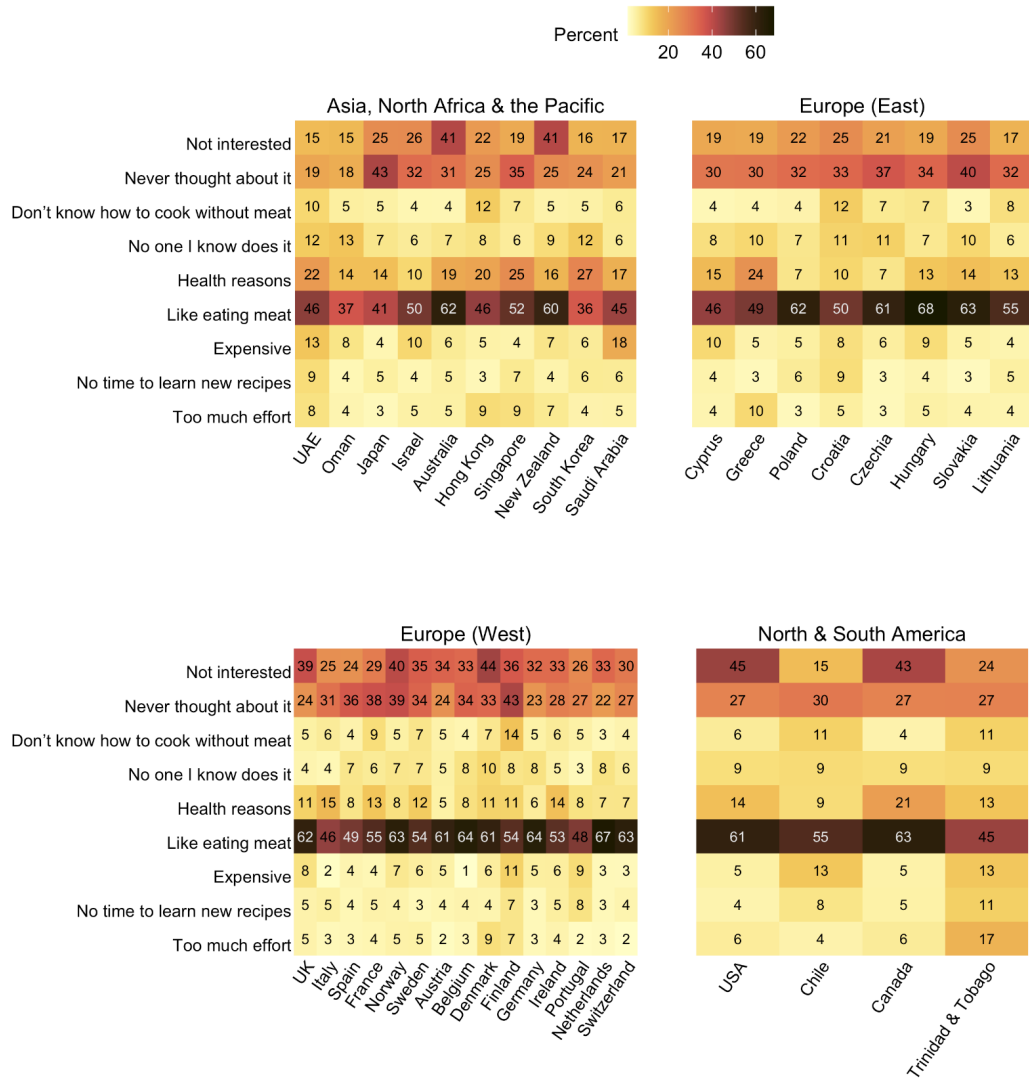
Among those who said they had *not* tried to reduce their meat consumption in the prior month, the most common reasons it would be difficult to do so (i.e., “barriers”) were that they like eating meat, they were not interested in doing it, and that they had never thought about eating less meat.⁵

Respondents in Hungary (68%), the Netherlands (67%), and Belgium and Germany (both 64%) were most likely to say that they like eating meat, and this was the top-selected barrier in all surveyed countries and territories except one (Japan). The United States (45%), Denmark (44%), and Canada (43%) had the largest percentages of respondents who said that they were not interested in reducing their meat consumption. Japan (43%), Finland (43%), and Slovakia (40%) had the largest percentages who said they had never thought about eating less meat.

Among other barriers to reducing meat consumption, South Korea (27%), Singapore (25%), and Greece (24%) had the largest percentages of respondents who said they need to eat meat for health reasons. Saudi Arabia (18%), and the United Arab Emirates, Trinidad & Tobago, and Chile (all 13%) had the largest percentages who said that it’s too expensive. Trinidad & Tobago (17%) and Greece (10%) had the largest percentages who said that it’s too much effort. Oman (13%), and the United Arab Emirates and South Korea (both 12%) had the largest percentages who said no one they know tries to eat less meat. Finland (14%), and Hong Kong and Croatia (both 12%) had the largest percentages who said they don’t know how to cook meals without meat. Finally, Trinidad & Tobago (11%), and the United Arab Emirates and Croatia (both 9%) had the largest percentages who said they don’t have time to learn new recipes.

⁵ Respondents were allowed to select more than one answer to this question.

Perceived barriers to eating less meat among non-adopters



Which of the following would make it difficult for you to eat less meat? Select all that apply.

Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare's Center for Behavior & the Environment; 2023

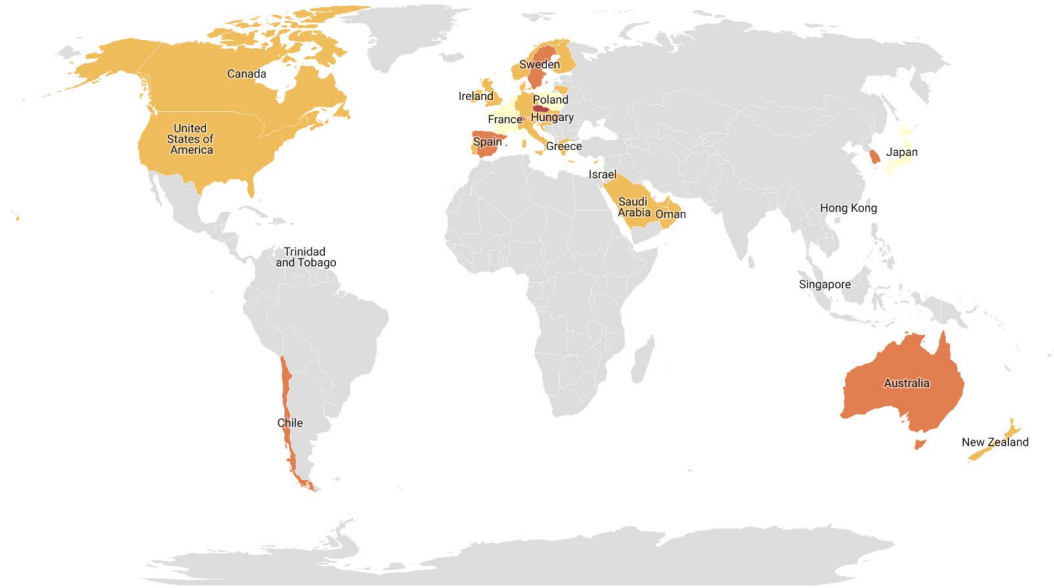
4. Carbon Offsets

4.1. Relatively few respondents said they had ever bought carbon offsets.

Relatively few respondents said they had ever bought carbon offsets, which fund projects that reduce carbon (e.g., planting trees). Respondents in Czechia (30%), Sweden (27%), and South Korea and Chile (both 26%) were the most likely to say so, while respondents in Japan (7%), Israel (5%), and France (4%) were the least likely to say so.

Bought carbon offsets

% who say they have bought carbon offsets



Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare's Center for Behavior & the Environment, 2023 - Created with Datawrapper

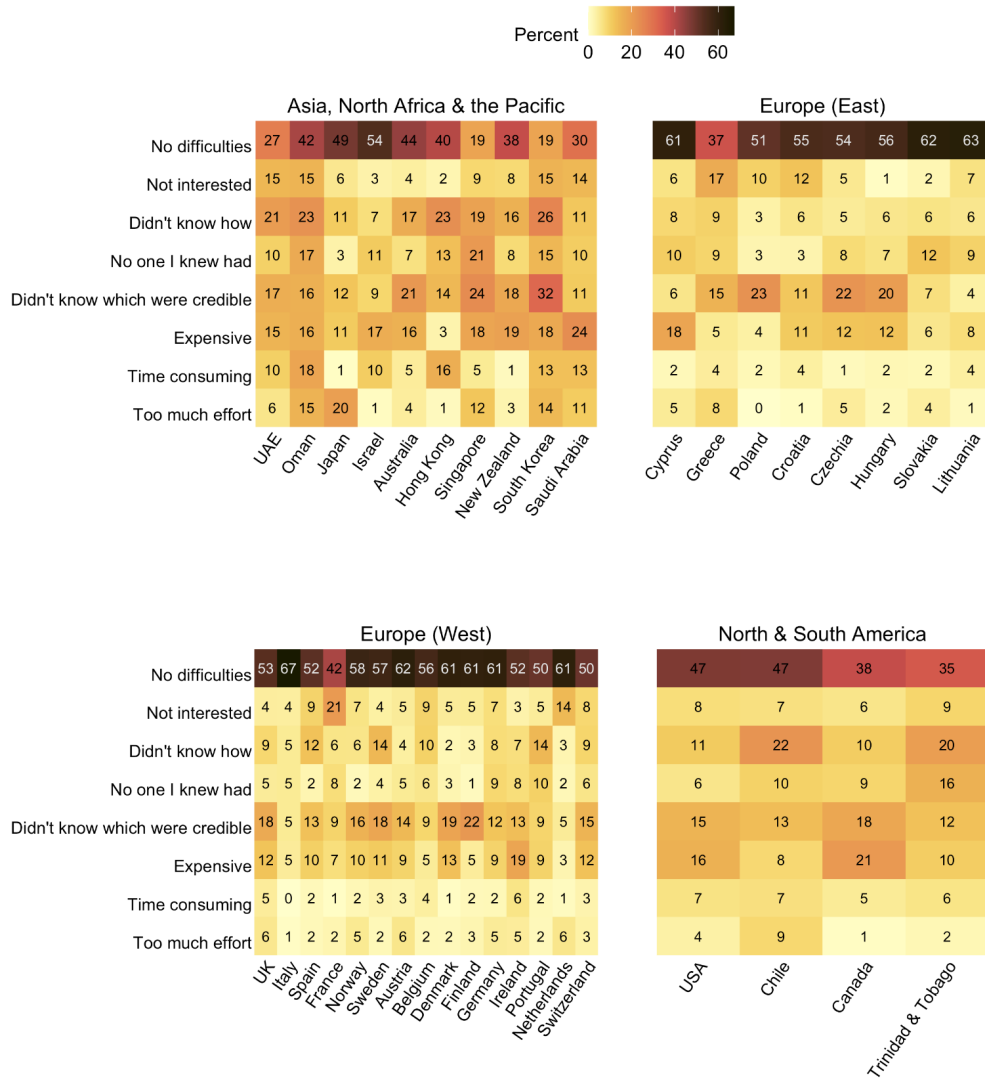
4.2. Most respondents who have bought carbon offsets said they faced no difficulties doing so.

Among respondents who said they had ever bought carbon offsets, majorities in 22 out of 37 countries and territories said they did not have any difficulties doing so. On average, respondents in Europe were most likely to say they had not had difficulties, including in Italy (67%), Lithuania (63%), and Slovakia and Austria (both 62%). Respondents who bought carbon offsets were least likely to say they did not face difficulties in the United Arab Emirates (27%), and Singapore and South Korea (both 19%), meaning that they were most likely to say they faced some difficulties.

Respondents in Asia, North Africa, and North and South America were more likely to say that they had some difficulties buying carbon offsets. South Korea (32%), Singapore (24%), and Poland (23%) had the largest percentages of respondents who said they did not know which carbon offsets were credible.⁶ South Korea (26%), and Hong Kong and Oman (both 23%) had the largest percentages who said they did not know how to buy carbon offsets. Saudi Arabia (24%), Canada (21%), and Ireland and New Zealand (both 19%) had the largest percentages who said carbon offsets were expensive. Singapore (21%), Oman (17%), and Trinidad & Tobago (16%) had the largest percentages who said no one they knew had bought carbon offsets. France (21%) and Greece (17%) had the largest percentages who said they weren't interested. Japan (20%), Oman (15%), and South Korea (14%) had the largest percentages who said they thought it would take too much effort. Finally, Oman (18%) and Hong Kong (16%) had the largest percentages who said it took a lot of time.

⁶ Respondents were allowed to select more than one answer to this question, unless they selected “I didn't have any difficulties.”

Difficulties experienced by those who have bought carbon offsets



Did any of the following things make it difficult for you to buy carbon offsets? Select all that apply.

Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare's Center for Behavior & the Environment; 2023

4.3. Among those who had never bought carbon offsets, the most common barriers were never hearing about them, not being interested, or never having thought about them.

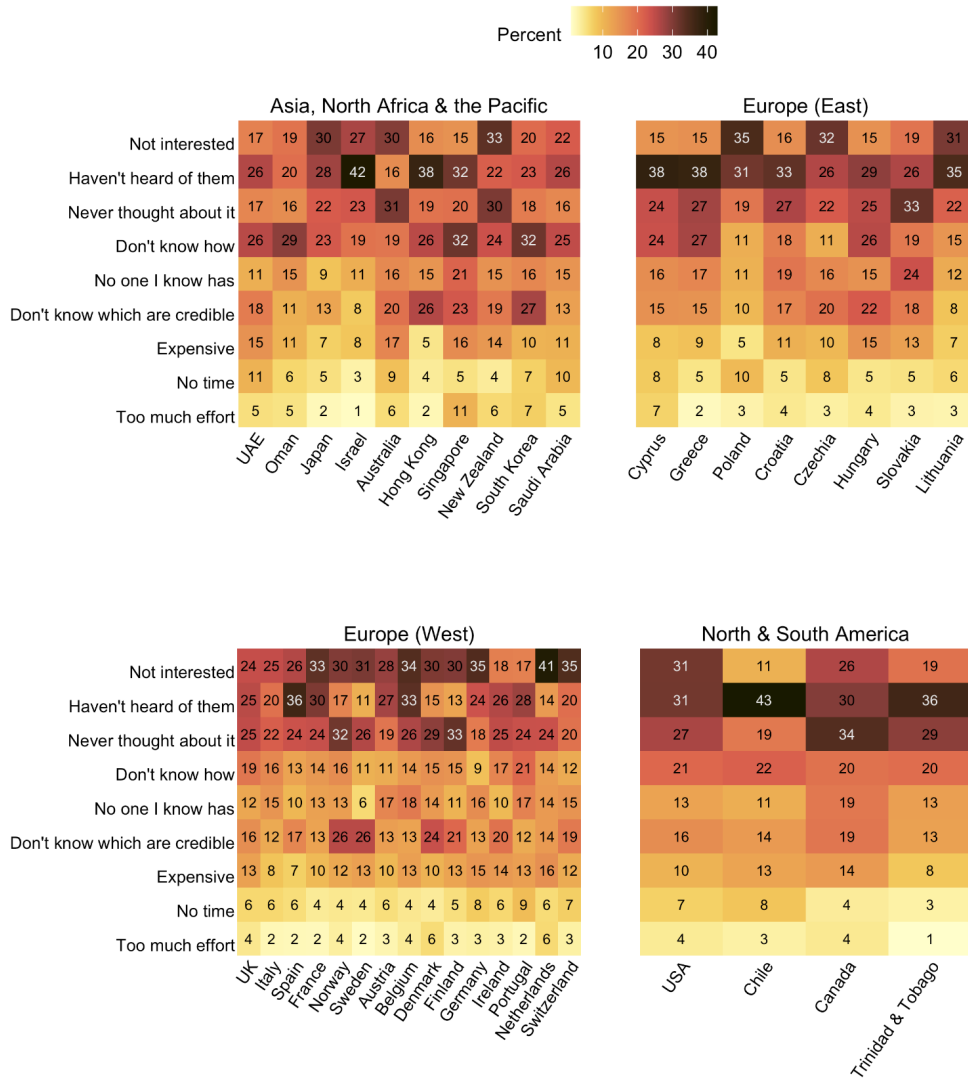
Among those who said they had *never* bought carbon offsets, the most common reasons it would be difficult to do so (i.e., “barriers”) were that they had never heard of carbon offsets, they were not interested, or they had never thought about buying carbon offsets.⁷

Respondents in Chile (43%), Israel (42%), and Hong Kong, Cyprus, and Greece (all 38%) were all most likely to say they had never heard of carbon offsets. Respondents in the Netherlands (41%) and Germany, Poland, and Switzerland (all 35%) were most likely to say they were not interested in them. Respondents in Canada (34%), and Slovakia and Finland (both 33%) were most likely to say they had never thought about buying carbon offsets.

Among other barriers to buying carbon offsets, respondents in Singapore (32%), South Korea (32%), and Oman (29%) were most likely to say they did not know how. South Korea (27%) and Hong Kong, Norway, and Sweden (all 26%) had the highest percentages of respondents who said that they did not know which carbon offsets are credible. Slovakia (24%), Singapore (21%), and Croatia and Canada (both 19%) had the largest percentages who said no one they know has bought carbon offsets. Australia (17%), and Singapore and the Netherlands (both 16%) had the largest percentages who said carbon offsets are expensive. The United Arab Emirates (11%), and Saudi Arabia and Poland (both 10%) had the largest percentages who said they don’t have the time. Finally, Singapore (11%), and Cyprus and South Korea (7%) had the largest percentages who said it is too much effort.

⁷ Respondents were allowed to select more than one answer to this question.

Perceived barriers to buying carbon offsets among non-adopters



Which of the following would made it difficult to buy carbon offsets?
 Select all that apply.

Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare's Center for Behavior & the Environment; 2023

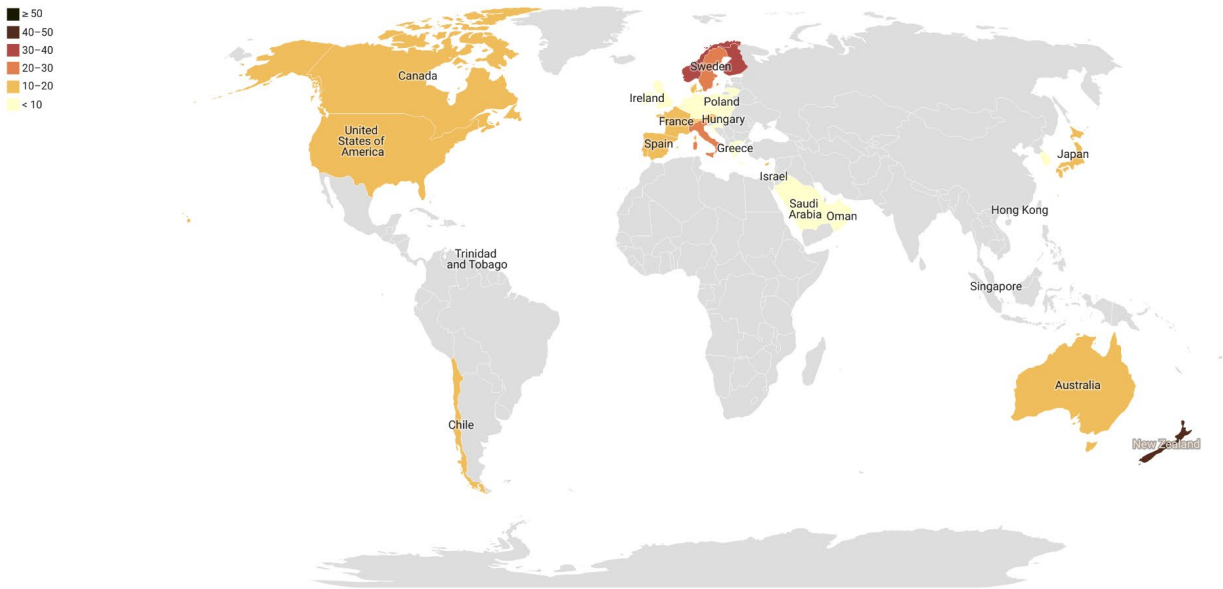
5. Heat Pumps

5.1. Relatively few respondents overall said they have converted their household to a heat pump, though adoption was high in a few countries.

Relatively few respondents across all surveyed countries and territories (12%, see section 1.1) said they had converted their household heating and cooling to a heat pump (a device that uses electricity more efficiently to heat and cool homes by transferring heat from one place to another). However, reported adoption of heat pumps varied widely by country and territory, and ranged from 45% in New Zealand to 3% in Israel and the United Kingdom. Other countries with higher reported rates of adoption of heat pumps were Norway (38%), Finland (32%), and Sweden (27%).

Converted household heating and cooling to a heat pump

% who say they have converted their household heating and cooling to a heat pump



Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare's Center for Behavior & the Environment, 2023 • Created with Datawrapper

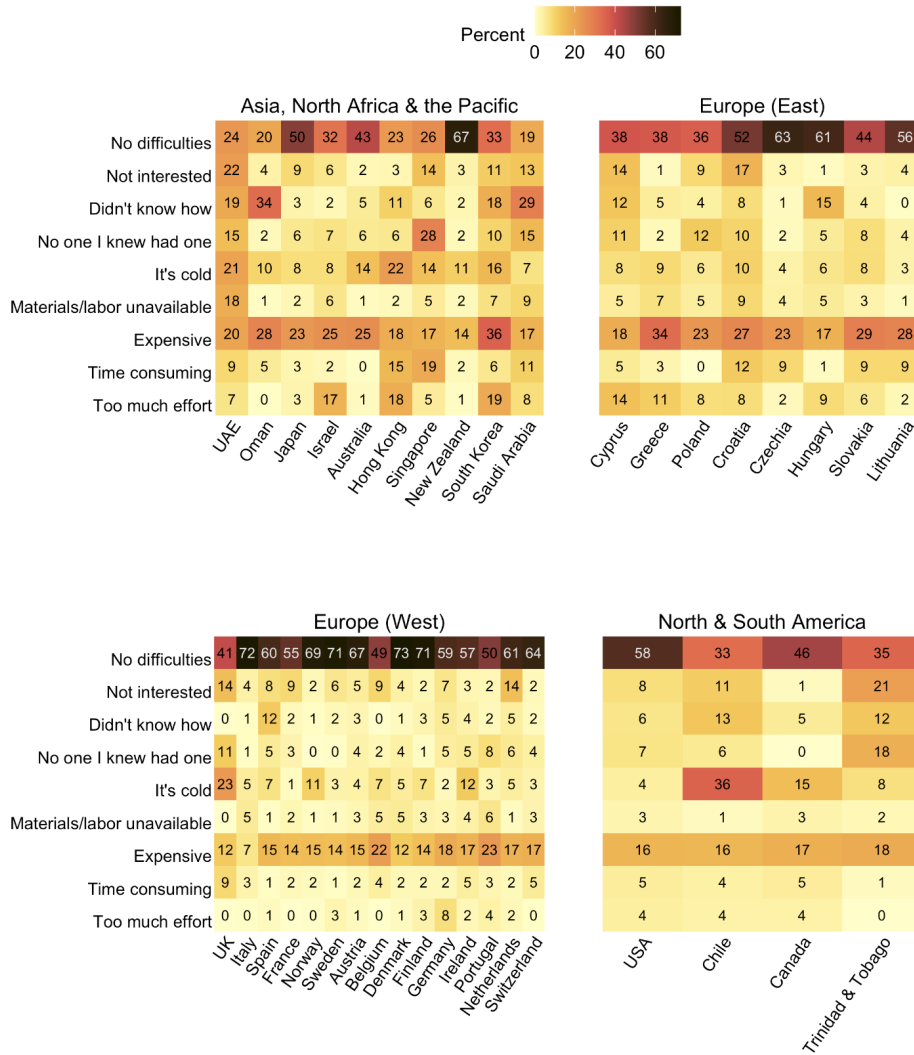
5.2. Many respondents who converted their home to a heat pump said they faced no difficulties doing so.

Among respondents who said they converted their household heating and cooling to a heat pump, majorities in 20 out of 37 countries and territories said they did not have any difficulties doing so. Respondents in Northern and Western Europe were most likely to say they had not had difficulties, with the largest percentages in Denmark (73%), Italy (72%), and Sweden and Finland (both 71%). Respondents who converted their home to a heat pump were least likely to say they did not face difficulties in Hong Kong (23%), Oman (20%), and Saudi Arabia (19%), meaning that they were most likely to say they faced some difficulties.

However, other respondents who had adopted this behavior did report facing some difficulties. South Korea (36%), Greece (34%), and Slovakia (29%) had the highest percentages of respondents who said it was expensive.⁸ Oman (34%), Saudi Arabia (29%), and the United Arab Emirates (19%) had the highest percentages who said they did not know how. Chile (36%), the United Kingdom (23%), and Hong Kong (22%) had the highest percentages who said it is cold where they live. Singapore (28%), Trinidad & Tobago (18%), and the United Arab Emirates and Saudi Arabia (both 15%) had the highest percentages who said that no one they knew had a heat pump. The United Arab Emirates (22%), Trinidad & Tobago (21%), and Croatia (17%) had the highest percentages who said they were not interested. South Korea (19%), Hong Kong (18%), and Israel (17%) had the highest percentages who said they thought it would take too much effort. Singapore (19%), Hong Kong (15%), and Croatia (12%) had the highest percentages who said it took a lot of time. Finally, respondents in the United Arab Emirates (18%) and Saudi Arabia and Croatia (both 9%) said heat pumps, or contractors to install them, were not available.

⁸ Respondents were allowed to select more than one answer to this question, unless they selected “I didn’t have any difficulties.”

Difficulties experienced by those who have converted to a heat pump



Did any of the following things make it difficult for you to convert your household heating and cooling to a heat pump? Select all that apply.

Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare's Center for Behavior & the Environment; 2023

5.3. Among those who had not converted to a heat pump, the most common barriers were not owning their home or conversion being too expensive.

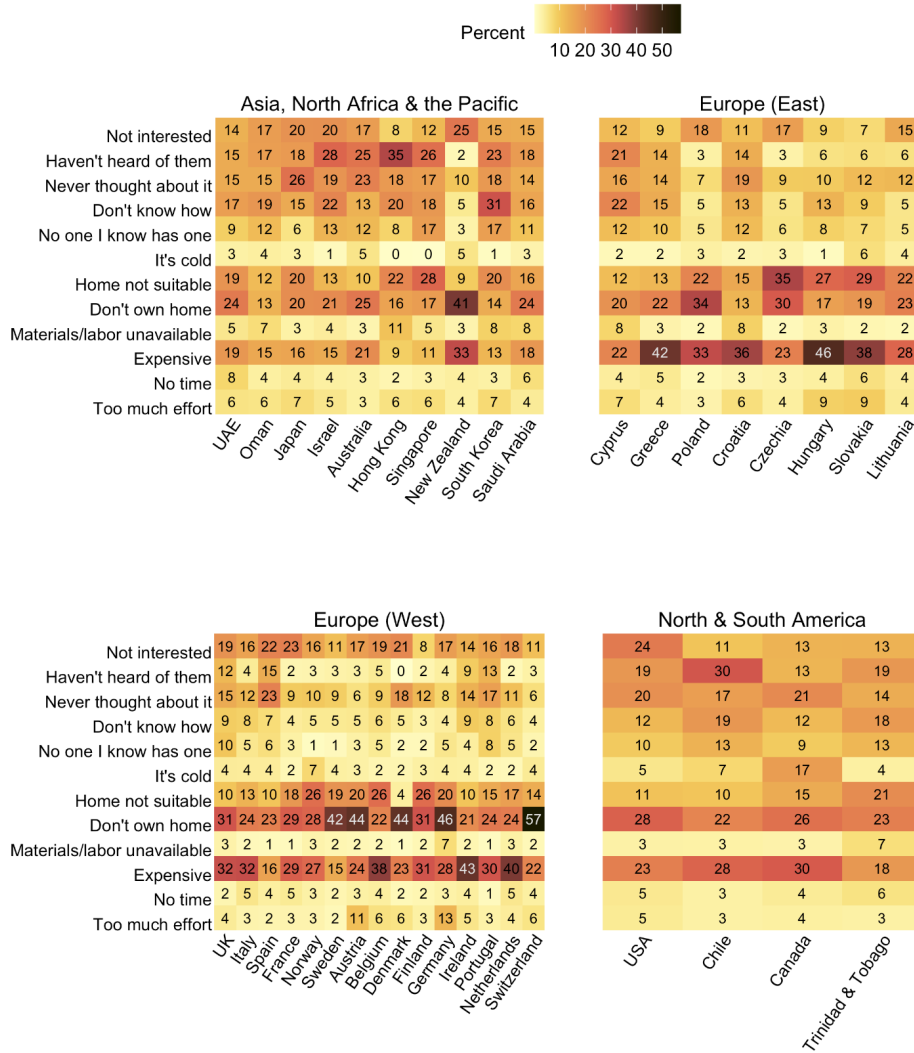
Among those who said they had *not* converted their household heating and cooling to a heat pump, the most common reasons it would be difficult to do so (i.e., “barriers”) were that they do not own their home, or that it is too expensive.⁹ Many respondents also said that their home is not suitable, or that they have never heard of heat pumps.

Respondents in Switzerland (57%), Germany (46%), and Austria and Denmark (both 44%) were most likely to say that they do not own their home. Respondents in Hungary (46%), Ireland (43%), and Greece (42%) were most likely to say it is too expensive. Czechia (35%), Slovakia (29%), and Singapore (28%) had the largest percentages of respondents who said their home was not suitable. Hong Kong (35%), Chile (30%), and Israel (28%) had the largest percentages who said they had never heard of heat pumps.

Among other barriers to converting to a heat pump, respondents in South Korea (31%), and Israel and Cyprus (both 22%) had the largest percentages of respondents who said they didn’t know how to convert their house to a heat pump. Japan (26%), and Australia and Spain (both 23%) had the highest percentages who said they had never thought about getting a heat pump. New Zealand (25%), the United States (24%), and France (23%) had the highest percentages who said that they were not interested. Singapore and South Korea (both 17%) had the highest percentages who said that no one they know has a heat pump. Canada (17%), and Norway and Chile (both 7%) had the highest percentages who said that it’s too cold where they live. Germany (13%), Austria (11%), and Hungary and Slovakia (both 9%) had the highest percentages who said that it is too much effort. Hong Kong (11%), and South Korea, Saudi Arabia, Cyprus, and Croatia (all 8%) had the highest percentages who said that the materials or contractors to install heat pumps are not available. Finally, the United Arab Emirates (8%), and Saudi Arabia, Slovakia, and Trinidad & Tobago (all 6%) had the highest percentages who said they had no time.

⁹ Respondents were allowed to select more than one answer to this question.

Perceived barriers to converting to a heat pump among non-adopters



Which of the following would make it difficult for you to convert your household heating and cooling to a heat pump? Select all that apply.

Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare's Center for Behavior & the Environment; 2023

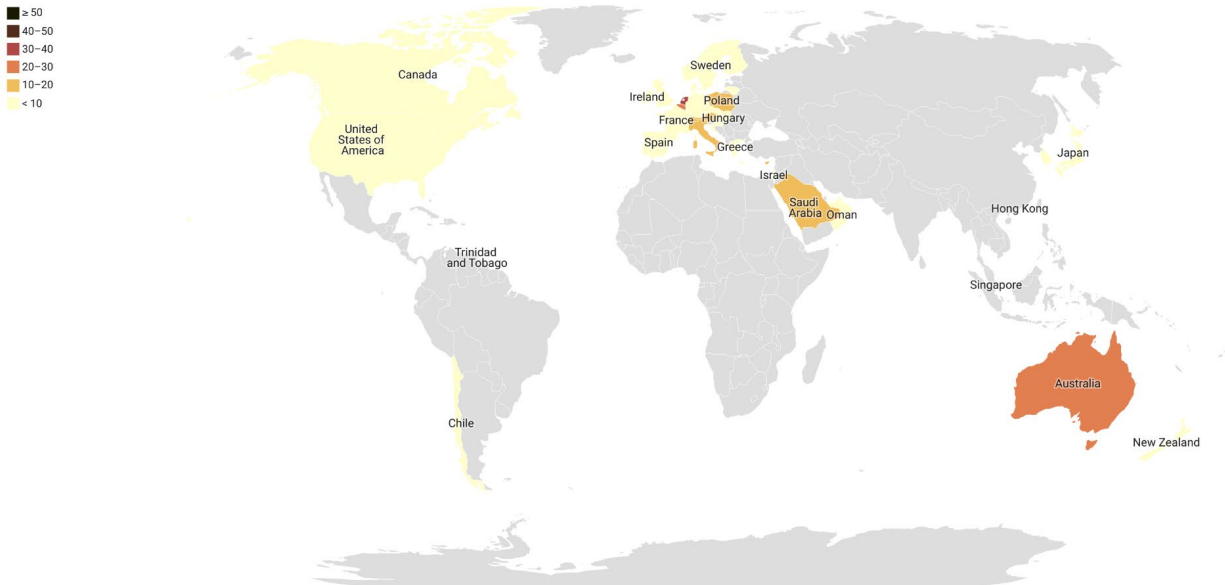
6. Solar Panels

6.1. Relatively few respondents overall said they have converted their household electricity to come from rooftop solar panels.

Relatively few respondents across all surveyed countries and territories (9%, see section 1.1) said they had converted their household electricity to come from rooftop solar panels. However, reported adoption of solar panels varied widely by country and territory, and ranged from 34% in the Netherlands to 2% in Canada and Chile. Other countries with higher reported rates of adoption of heat pumps were Australia (28%), Belgium (24%), and Cyprus (18%).

Converted to solar

% who say they have converted their household electricity to come from rooftop solar panels



Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare's Center for Behavior & the Environment; 2023 • Created with Datawrapper

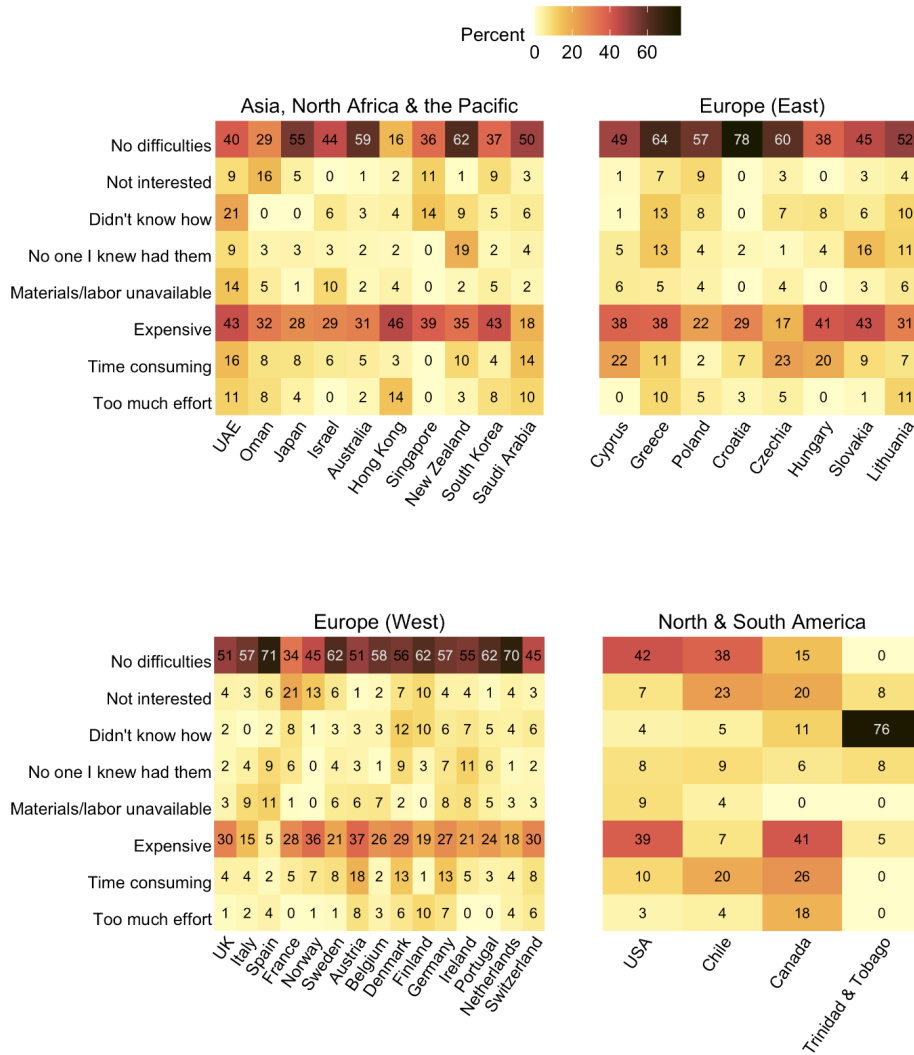
6.2. Many respondents who converted their electricity to come from rooftop solar panels said they faced no difficulties doing so.

Among respondents who said they converted their household electricity to come from rooftop solar panels, majorities in 21 out of 37 surveyed countries and territories said they did not have any difficulties doing so. Respondents in Europe were most likely to say they had not had difficulties, with large majorities saying so in Croatia (78%), Spain (71%), and the Netherlands (70%). Respondents who converted their electricity to solar were least likely to say they did not face difficulties in Hong Kong (16%), Canada (15%), and Trinidad & Tobago (0%), meaning that they were most likely to say they faced some difficulties.

However, other respondents who adopted this behavior did report facing some difficulties, including respondents in Hong Kong (46%), and Slovakia, South Korea, and the United Arab Emirates (all 43%), which had the largest percentages of respondents who said it was expensive.¹⁰ Trinidad & Tobago (76%), the United Arab Emirates (21%), and Singapore (14%) had the largest percentages of respondents who said they did not know how to convert their electricity to come from rooftop solar panels. Canada (26%), Czechia (23%), and Cyprus (22%) had the largest percentages who said it took a lot of time. Chile (23%), France (21%), and Canada (20%) had the largest percentages who said they weren't interested. New Zealand (19%), Slovakia (16%), and Greece (13%) had the largest percentages who said no one they knew had solar panels. Canada (18%), Hong Kong (14%), and the United Arab Emirates and Lithuania (both 11%) had the largest percentages who said they thought it would take too much effort. Finally, the United Arab Emirates (14%), Spain (11%), and Israel (10%) had the largest percentages who said the solar panels or contractors to install them were not available.

¹⁰ Respondents were allowed to select more than one answer to this question, unless they selected "I didn't have any difficulties."

Difficulties experienced by those who have converted to solar panels



Did any of the following things make it difficult for you to convert your electricity to come from rooftop solar panels? Select all that apply.

Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare's Center for Behavior & the Environment; 2023

6.3. Among those who had not converted to rooftop solar panels, the most common barriers were expense, not owning their home, or their home not being suitable.

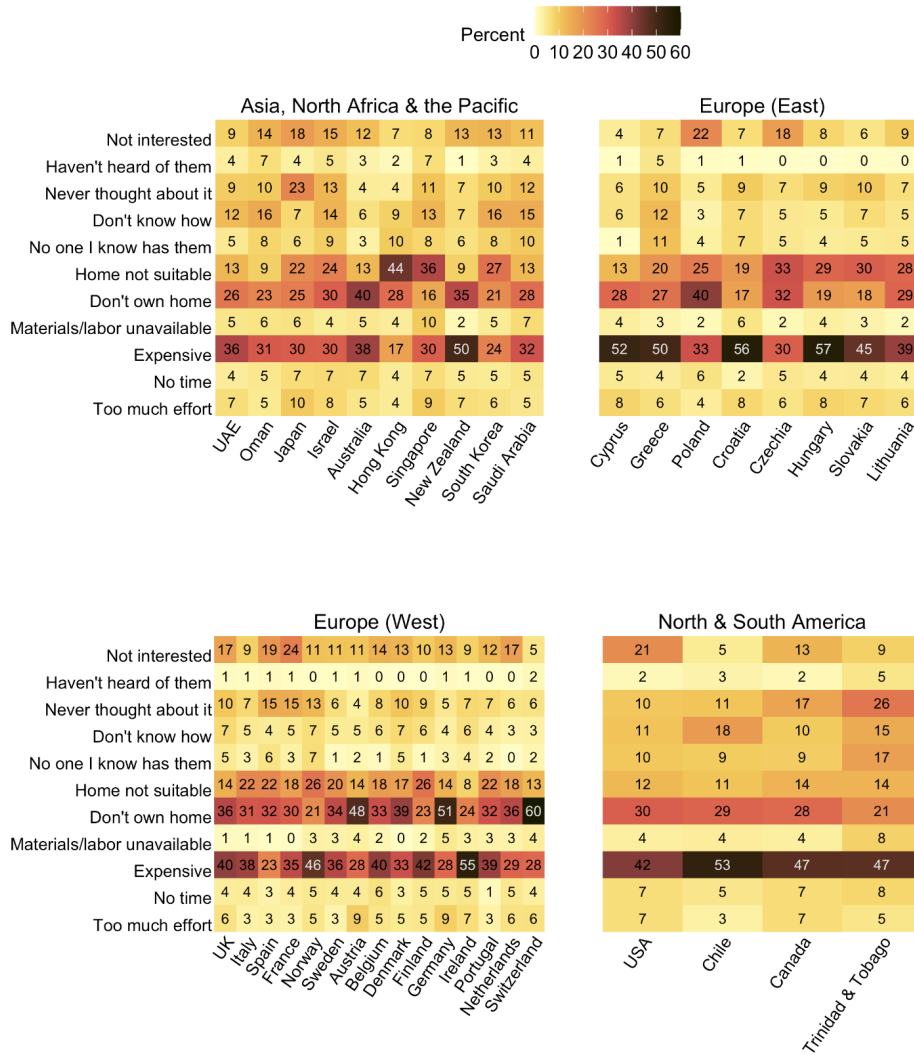
Among those who said they had *not* converted their electricity to come from rooftop solar panels, the most common reasons it would be difficult to do so (i.e., “barriers”) were that it is too expensive, they do not own their home, or that their home is not suitable.¹¹

Respondents in Hungary (57%), Croatia (56%), and Ireland (55%) were most likely to say that it is too expensive, and majorities gave this response in seven of the 37 countries and territories surveyed. Respondents in Switzerland (60%), Germany (51%), and Austria (48%) were most likely to say they do not own their home. Respondents in Hong Kong (44%), Singapore (36%), and Czechia (33%) were most likely to say their home is not suitable.

Among other barriers to solar panel adoption, Trinidad & Tobago (26%), Japan (23%), and Canada (17%) had the largest percentages of respondents who said they had never thought about getting rooftop solar panels. France (24%), Poland (22%), and the United States (21%) had the largest percentages who said they were not interested. Chile (18%), and South Korea and Oman (both 16%) had the largest percentages who said they do not know how to convert their electricity to come from rooftop solar panels. Trinidad & Tobago (17%) and Greece (11%) had the largest percentages who said no one they know has solar panels. Japan (10%), and Austria, Germany, and Singapore (all 9%) had the largest percentages who said it is too much effort to convert to rooftop solar panels. Singapore (10%), Trinidad & Tobago (8%), and Saudi Arabia (7%) had the highest percentages who said solar panels, or contractors to install them, are not available. Respondents in Trinidad & Tobago (8%), followed by Australia, Canada, Israel, Japan, Singapore, and the United States (all 7%), had the highest percentages who said they do not have the time. Finally, Singapore and Oman (both 7%) had the highest percentages who said they had never heard of rooftop solar panels.

¹¹ Respondents were allowed to select more than one answer to this question.

Perceived barriers to converting to solar panels among non-adopters



Which of the following would make it difficult for you to convert your electricity to come from rooftop solar panels? Select all that apply.

Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare's Center for Behavior & the Environment; 2023

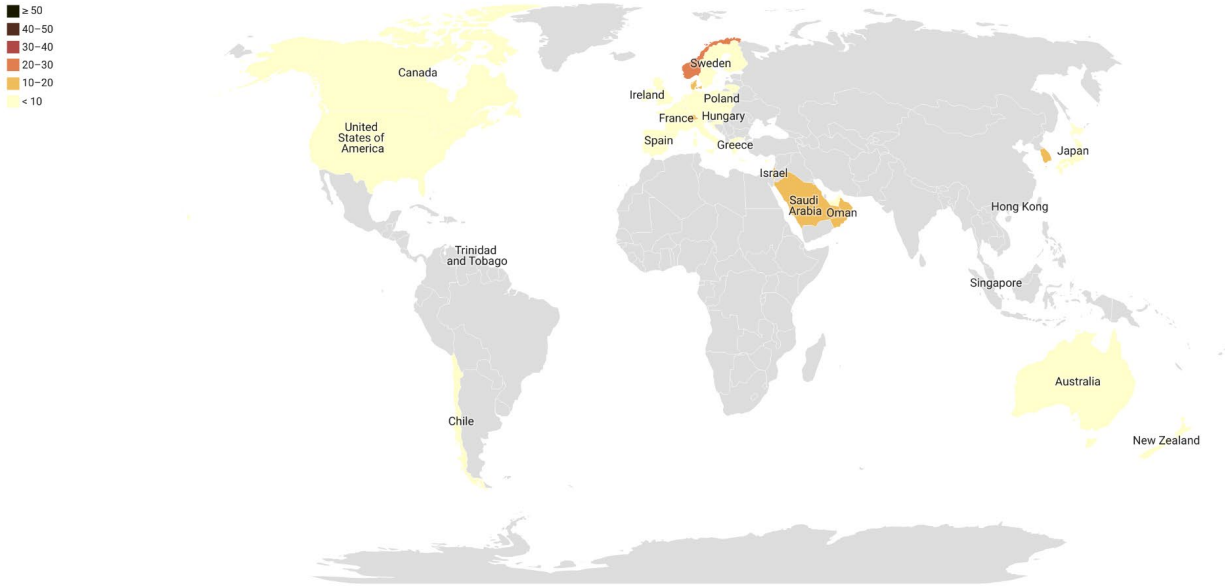
7. Electric Vehicles

7.1. Few respondents overall said they have owned or leased an electric car or truck.

Few respondents across all surveyed countries and territories (7%, see section 1.1) said they had owned or leased an electric car or truck. Respondents in Norway (25%) and Denmark (12%) were the most likely to say so, while respondents in Czechia and Poland (both 3%) were the least likely to say so.

Owned or leased an electric vehicle

% who say they have owned or leased an electric car or truck



Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare's Center for Behavior & the Environment; 2023 • Created with Datawrapper

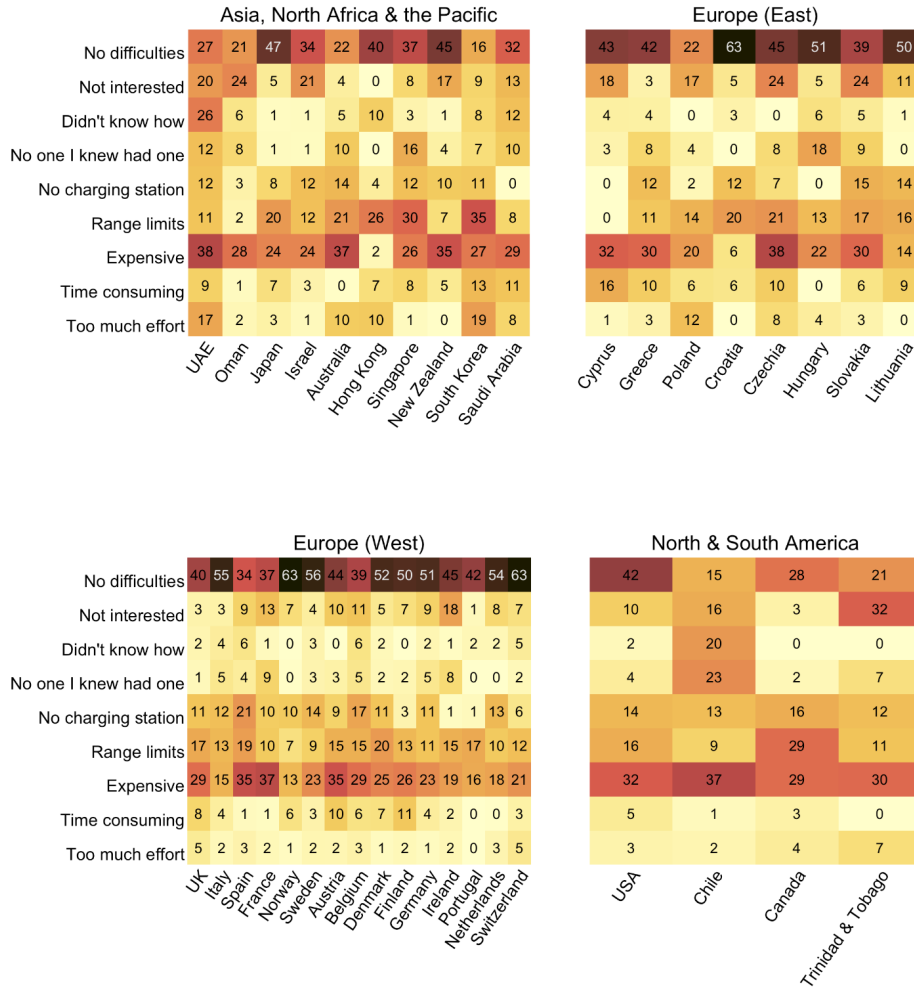
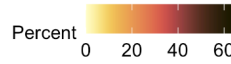
7.2. Many respondents who had owned or leased an electric vehicle said they faced no difficulties doing so.

Among respondents who said they had owned or leased an electric car or truck, majorities in 11 out of 37 surveyed countries and territories said they did not have any difficulties doing so. Respondents in Europe were most likely to say they had not had difficulties, with large majorities saying so in Croatia, Switzerland, and Norway (all 63%). Respondents who owned or leased an electric vehicle were least likely to say they did not face difficulties in Oman and Trinidad & Tobago (both 21%), South Korea (16%), and Chile (15%), meaning that they were most likely to say they faced some difficulties.

However, other respondents who had adopted this behavior did report facing some difficulties. The United Arab Emirates (38%), Czechia (38%), and Chile (37%) had the largest percentages of respondents who said it was expensive.¹² Trinidad & Tobago (32%), and Czechia, Slovakia, and Oman (all 24%) had the largest percentages who said they were not interested. South Korea (35%), Singapore (30%), and Canada (29%) had the largest percentages who said they thought electric cars or trucks could not travel far enough without having to recharge. Spain (21%), Belgium (17%), and Canada (16%) had the largest percentages who said they did not have access to a charging station. The United Arab Emirates (26%), Chile (20%), and Saudi Arabia (12%) had the largest percentages who said they did not know how to own or lease an electric car or truck. Chile (23%), Hungary (18%), and Singapore (16%) had the largest percentages of respondents who said no one they knew had an electric car or truck. South Korea (19%), the United Arab Emirates (17%), and Poland (12%) had the largest percentages who said they thought it would take too much effort. Finally, Cyprus (16%), South Korea (13%), and Saudi Arabia and Finland (both 11%) had the highest percentages who said it took a lot of time.

¹² Respondents were allowed to select more than one answer to this question, unless they selected “I didn’t have any difficulties.”

Difficulties experienced by those who have bought or leased an EV



Did any of the following things make it difficult for you to own or lease an electric car or truck? Select all that apply.

Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare's Center for Behavior & the Environment; 2023

7.3. Among those who had not owned or leased an electric vehicle, the most common barriers were expense, not being interested, or not being able to travel far enough without recharging.

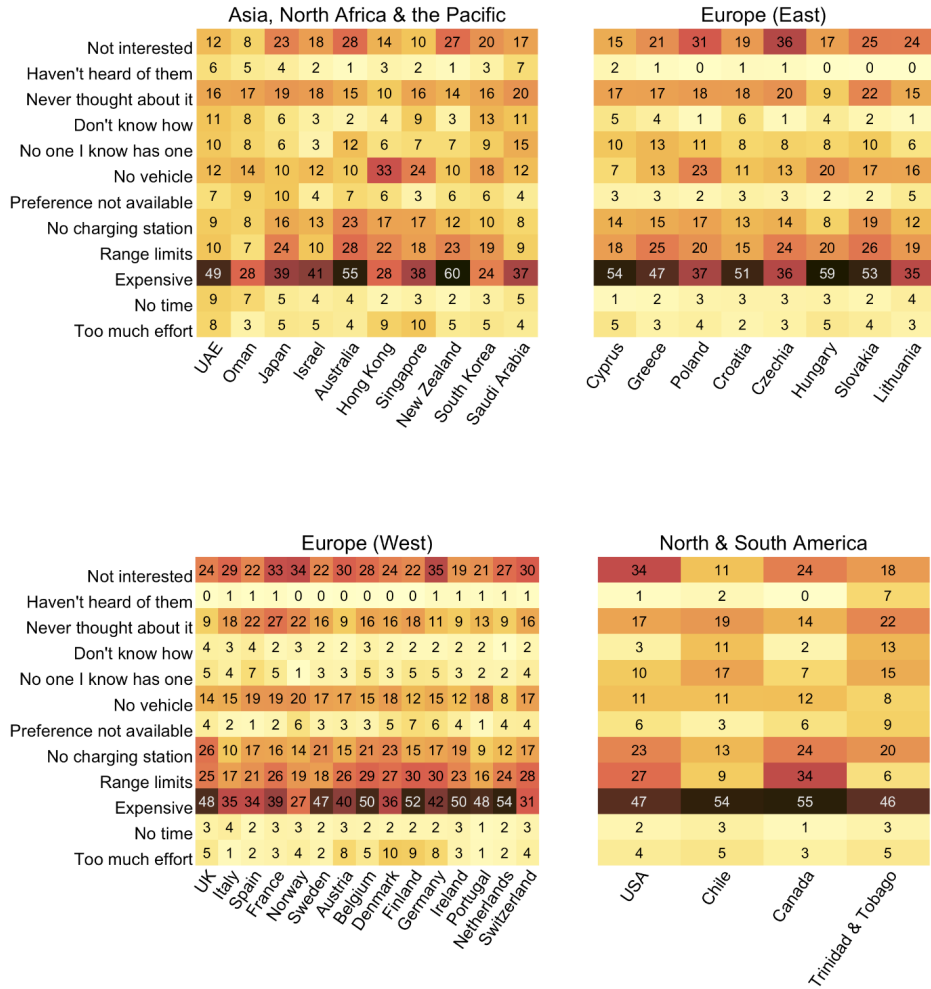
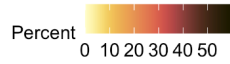
Among those who said they had *not* owned or leased an electric car or truck, the most common reasons it would be difficult to do so (i.e., “barriers”) were that it is too expensive, electric cars or trucks cannot travel far enough without having to recharge, or they are not interested in doing so.¹³

Respondents in Hungary (59%), and Canada and Australia (both 55%) said it is too expensive, and majorities gave this response in 12 of the 37 countries and territories surveyed. Czechia (36%), Germany (35%), and Norway and the United States (both 34%) had the highest percentages of respondents who said they are not interested in doing this. Canada (34%), and Finland and Germany (both 30%) had the highest percentages who said that electric cars or trucks cannot travel far enough without having to recharge.

Among other barriers to electric vehicle adoption, Hong Kong (33%), Singapore (24%), and Poland (23%) had the highest percentages of respondents who said that they do not need a vehicle. The United Kingdom (26%), Canada (24%), and Denmark, New Zealand, and the United States (all 23%) had the highest percentages who said that they do not have access to a charging station. France (27%), followed by Norway, Slovakia, Spain, and Trinidad & Tobago (all 22%) had the highest percentages who said they had never thought about getting an electric car or truck. Chile (17%), and Saudi Arabia and Trinidad & Tobago (both 15%) had the highest percentages who said no one they know has an electric car or truck. South Korea and Trinidad & Tobago (both 13%), followed by Saudi Arabia (11%), had the highest percentages who said they do not know how to own or lease an electric car or truck. Singapore and Denmark (both 10%) had the highest percentages of respondents who said that it is too much effort to do so. Japan (10%), and Oman and Trinidad & Tobago (both 9%) had the largest percentages who said the type of car or truck they want is not available. The United Arab Emirates (9%) and Oman (7%) had the highest percentages who said they did not have the time. Finally, Trinidad & Tobago and Saudi Arabia (both 7%), and the United Arab Emirates (6%) had the highest percentages who said they had never heard of electric cars or trucks.

¹³ Respondents were allowed to select more than one answer to this question.

Perceived barriers to buying or leasing an EV among non-adopters



Which of the following would make it difficult for you to own or lease an electric car or truck? Select all that apply.

Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare's Center for Behavior & the Environment; 2023

Appendix I: Survey Method

The data in this report are based on a survey of 139,136 Facebook monthly active users, aged 18 and older. Responses were collected from 187 countries and territories worldwide, including 107 individual countries and territories and 3 geographic groups comprising 80 additional countries and territories.

This report includes a data sub-sample of 37 high-emission countries and territories with 39,683 observations. The countries in this list are both: (1) above the global average in emissions (4.4 tons CO₂e) and (2) have a GNI per capita that is higher than 12,535 \$US and therefore are classified as high-income by the World Bank. The survey was conducted August 3 – September 3, 2023. Sampled Facebook users received an invitation to answer a short survey at the top of their Facebook News Feed and had the option to click the invitation to complete the survey on the Facebook platform.

The sample was drawn from the population of Facebook monthly active users, defined as registered and logged-in Facebook users who had visited Facebook through the website or a mobile device in the last 30 days.¹⁴ Within each country or territory surveyed, we drew a sample in proportion to publicly available age and gender benchmarks.

All countries and territories were sampled in proportion to data from the United Nations Population Division 2019 World Population Projections. The sample population in the United States was drawn in proportion to the U.S. Census Bureau Current Population Survey 2018 March Supplement.

Data were then weighed separately for each country, territory, and group using a multi-stage, pre- and post-survey weighting process based on census and nationally representative survey benchmarks, Facebook demographics, and Facebook engagement metrics, balanced to the total number of survey completions.¹⁵

This project is a partnership between the Yale Program on Climate Change Communication, Data for Good at Meta, and Rare's Center for Behavior & the Environment. The survey instrument was designed by Anthony Leiserowitz, Seth Rosenthal, Marija Verner, and Jennifer Carman of Yale University, with support by Emily Wood, Natalia Ordaz Reynoso, and Nicole Buttermore at Meta; and Erik Thulin at Rare. The survey was fielded by Meta. Survey weights were generated by Nicole Buttermore and Natalia Ordaz Reynoso. The charts and maps were designed by Emily Goddard and Jennifer Marlon of Yale University.

¹⁴ The Facebook monthly active users figure is reported in the company's quarterly earnings report found on <https://investor.fb.com>. As of June 30, 2023, there were 3.03 billion monthly active users globally.

¹⁵ Weights were generated in three stages. First, we adjusted for sampling in proportion to age and gender census benchmarks. Second, we adjusted for non-response error using Inverse Propensity Score Weighting (IPSW) on Facebook demographics and Facebook engagement metrics to make the sample more representative of Facebook monthly active users. The Facebook monthly active user sampling frame constitutes a sizable proportion of the global population, but the proportion of adults who use Facebook differs from country to country. To more closely reflect the entire adult population in a country or territory, we used poststratification based on publicly available nationally representative survey benchmarks, using weights from the first stages as inputs. The final weights were balanced to the total number of survey completions.

Rounding error and tabulation

Percentages are weighted based on general population parameters for each surveyed country and territory.

For tabulation purposes, percentage points are rounded to the nearest whole number. As a result, percentages in a given chart may total slightly higher or lower than 100%. Summed response categories (e.g., “a lot” + “a moderate amount”) are rounded after sums are calculated (e.g., 25.3% + 25.3% = 50.6%, which, after rounding, would be reported as 25% + 25% = 51%).

Sample size for surveyed countries, territories, and groups

Our study collected data from a total of 187 countries and territories,¹⁶ including 80 countries and territories that were collapsed into three geographic groups due to sample size (i.e., Caribbean, Asian & Pacific Islands, and Sub-Saharan Africa). In this particular report, we use a data sub-sample of 37 high-emission countries and territories with 39,683 observations. The unweighted sample sizes for each country and territory in *this data subset* are as follows:

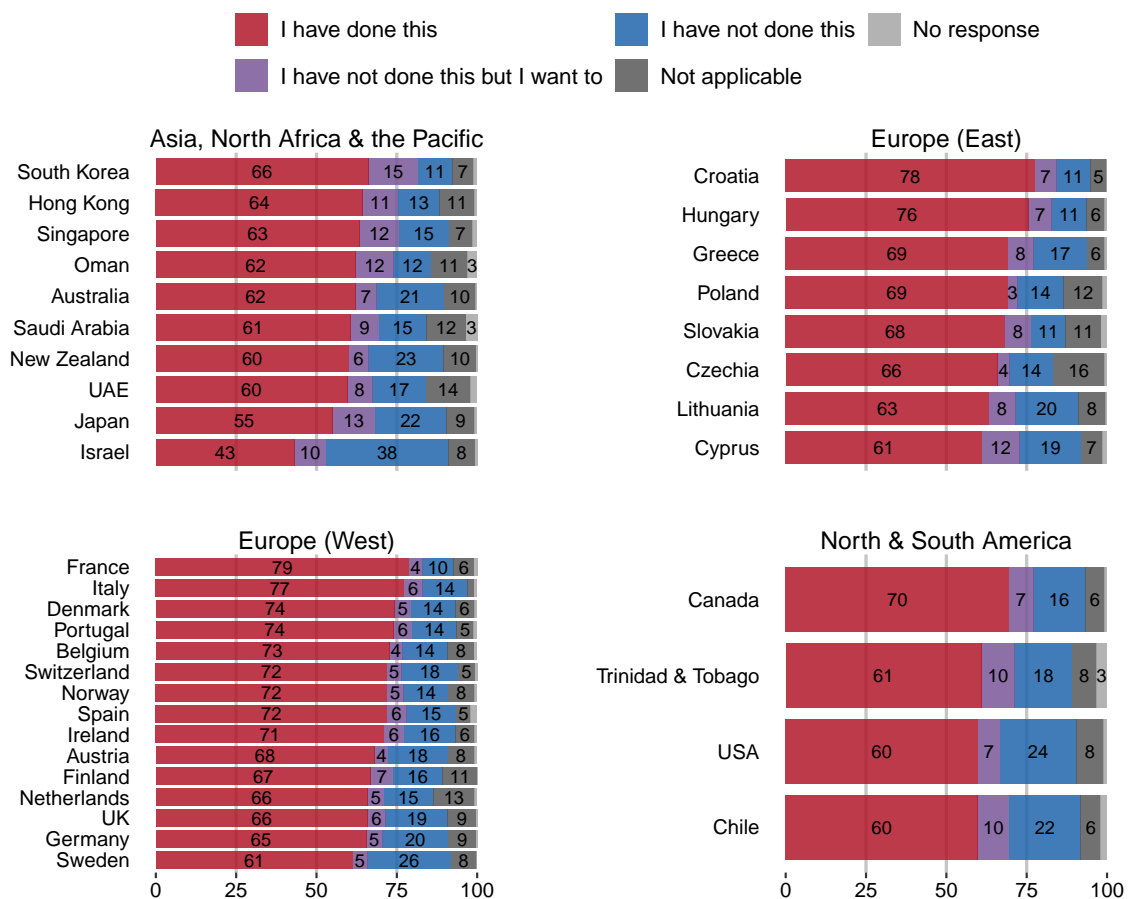
- Australia ($n = 936$)
- Austria ($n = 1,157$)
- Belgium ($n = 1,027$)
- Canada ($n = 1,010$)
- Chile ($n = 1,192$)
- Croatia ($n = 669$)
- Cyprus ($n = 571$)
- Czechia ($n = 1,104$)
- Denmark ($n = 1,020$)
- Finland ($n = 631$)
- France (includes Saint Pierre and Miquelon) ($n = 1,497$)
- Germany ($n = 2,023$)
- Greece ($n = 1,024$)
- Hong Kong ($n = 467$)
- Hungary ($n = 620$)
- Ireland ($n = 1,080$)
- Israel ($n = 988$)
- Italy ($n = 1,093$)
- Japan ($n = 1,116$)
- Lithuania ($n = 1,301$)
- Netherlands, The ($n = 927$)
- New Zealand ($n = 1,029$)
- Norway ($n = 1,134$)
- Oman ($n = 483$)
- Poland ($n = 897$)
- Portugal ($n = 948$)
- Saudi Arabia ($n = 1,440$)
- Singapore ($n = 378$)
- Slovakia ($n = 1,050$)
- South Korea ($n = 1,038$)
- Spain ($n = 912$)
- Sweden ($n = 1,299$)
- Switzerland ($n = 1,007$)
- Trinidad and Tobago ($n = 539$)
- United Arab Emirates ($n = 1,271$)
- United Kingdom ($n = 1,969$)
- United States of America ($n = 2,836$)

¹⁶ Samples were drawn from two additional areas (Eritrea and Tuvalu), but no respondents participated in the surveys in these areas, so they are excluded from the final list.

Appendix II: Results by Region

2.1 In the last month have you tried to reduce your food waste?

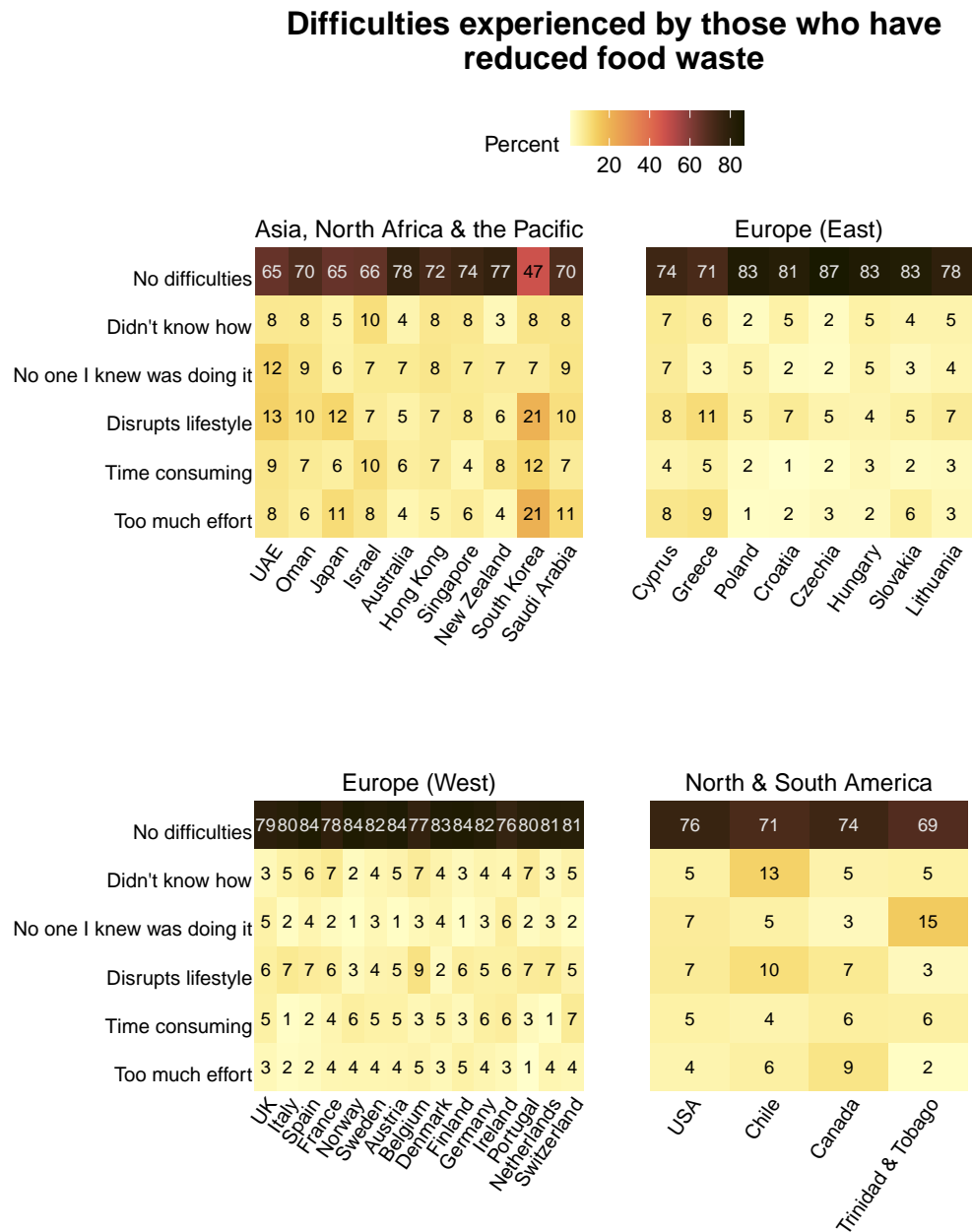
Tried to reduce food waste



In the last month have you tried to reduce your food waste?

Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare's Center for Behavior & the Environment; 2023

2.2 Of those who have tried to reduce food waste, difficulties included...

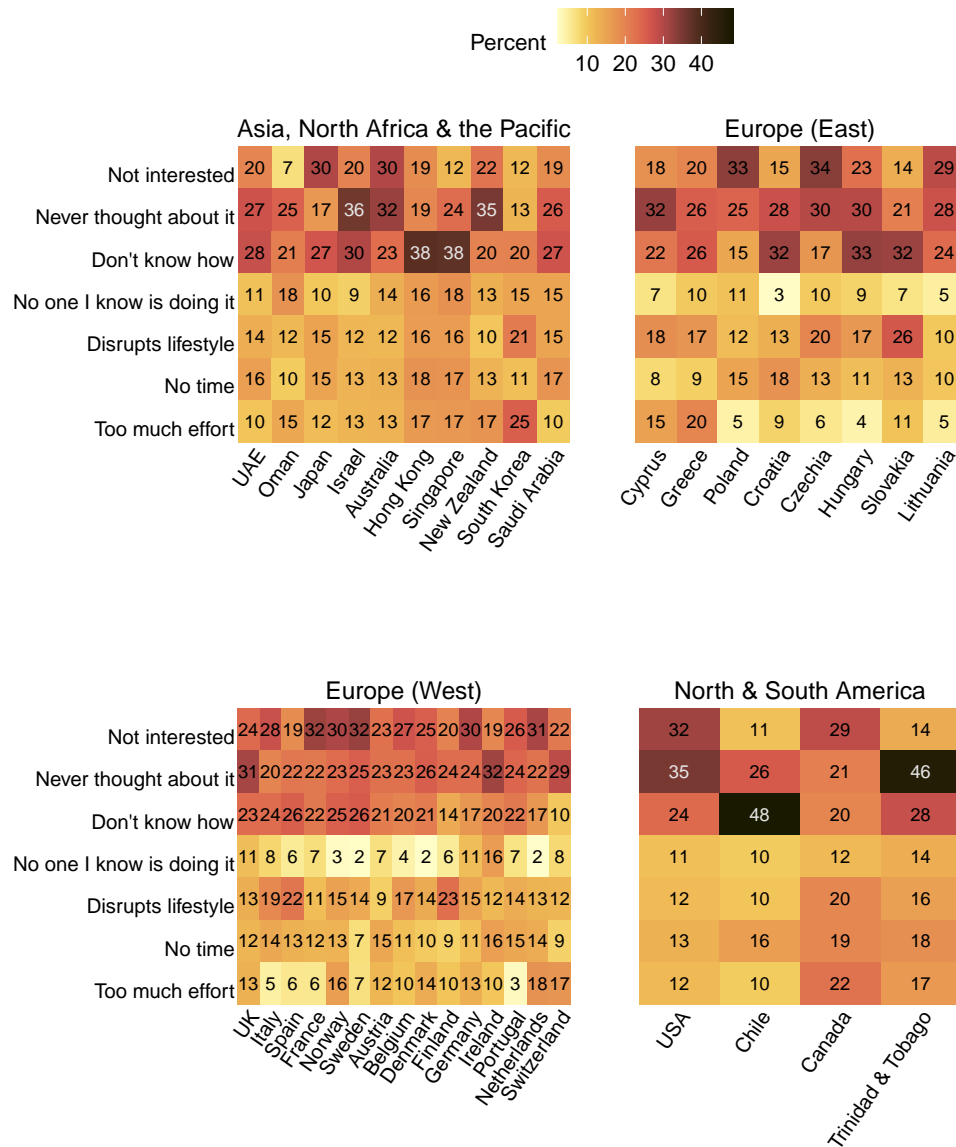


Did any of the following things make it difficult for you to reduce your food waste? Select all that apply.

Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare's Center for Behavior & the Environment; 2023

2.3 Of those who haven't tried to reduce food waste, barriers included...

Perceived barriers to reducing food waste among non-adopters

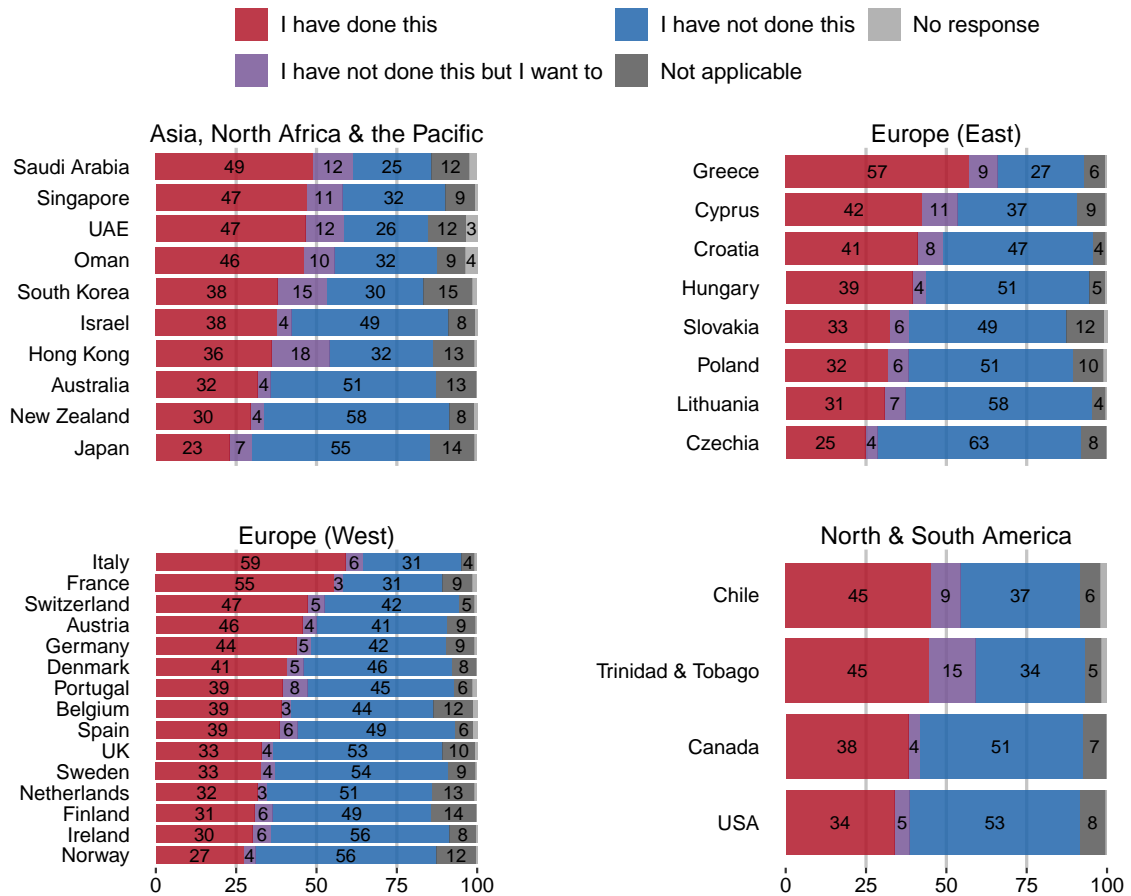


Which of the following would make it difficult for you to reduce your food waste? Select all that apply.

Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare's Center for Behavior & the Environment; 2023

3.1 In the last month have you tried to eat less meat?

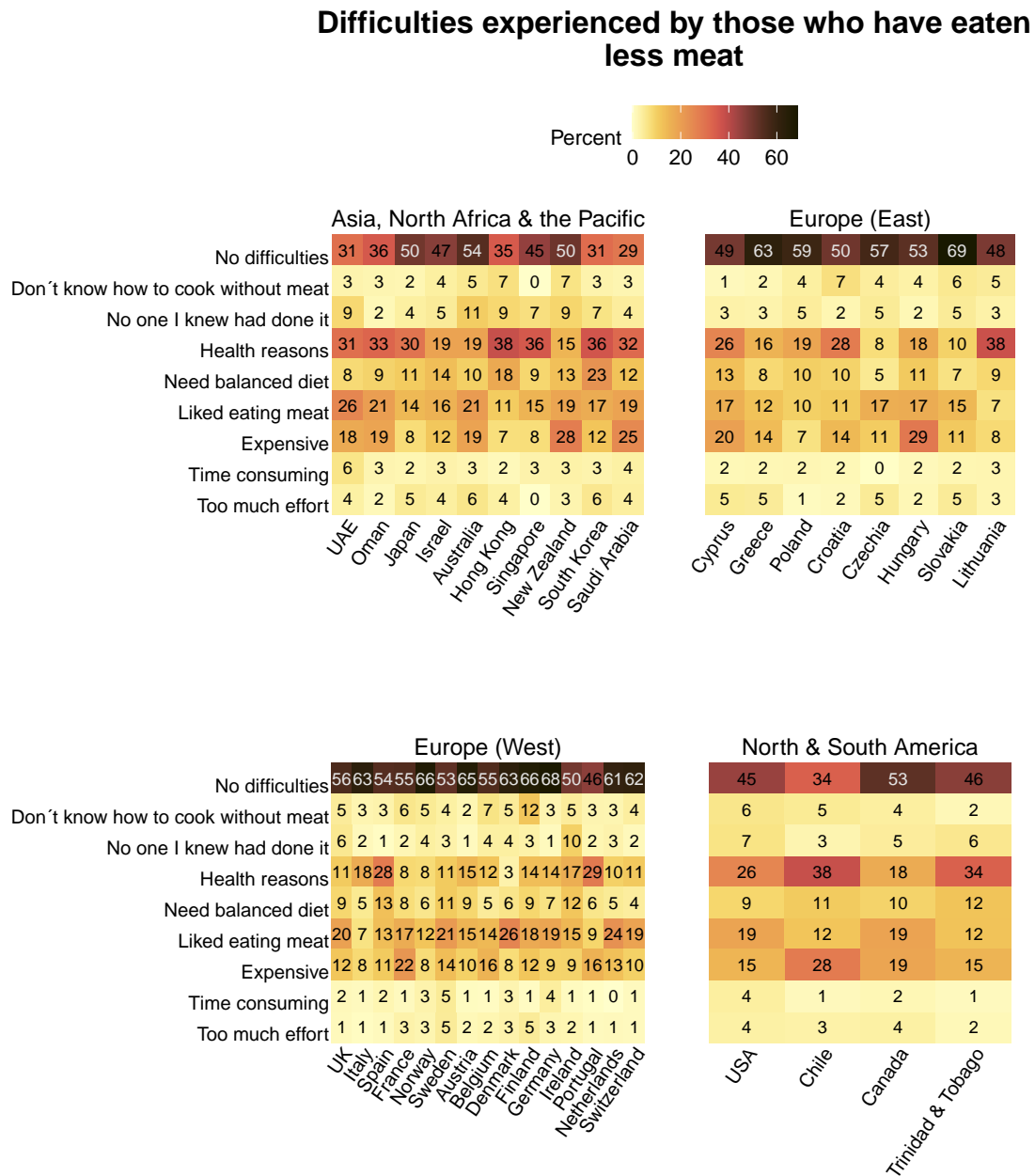
Tried to eat less meat



In the last month have you tried to eat less meat?

Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare's Center for Behavior & the Environment; 2023

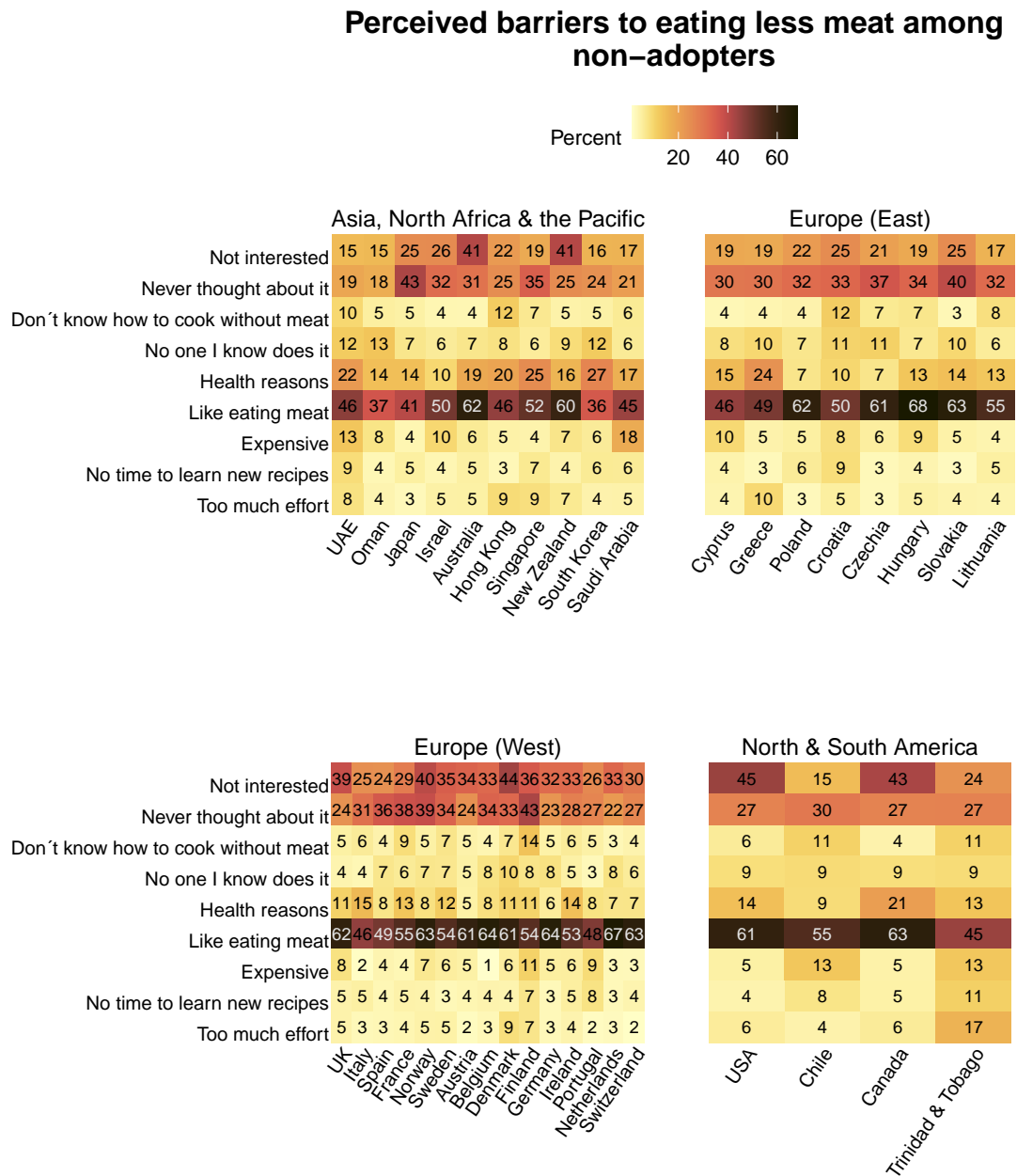
3.2 Of those who have tried to eat less meat, difficulties included...



Did any of the following things make it difficult for you to eat less meat? Select all that apply.

Source: Yale Program on Climate Change Communication / Data for Good a Meta / Rare's Center for Behavior & the Environment; 2023

3.3 Of those who haven't tried to eat less meat, barriers included...

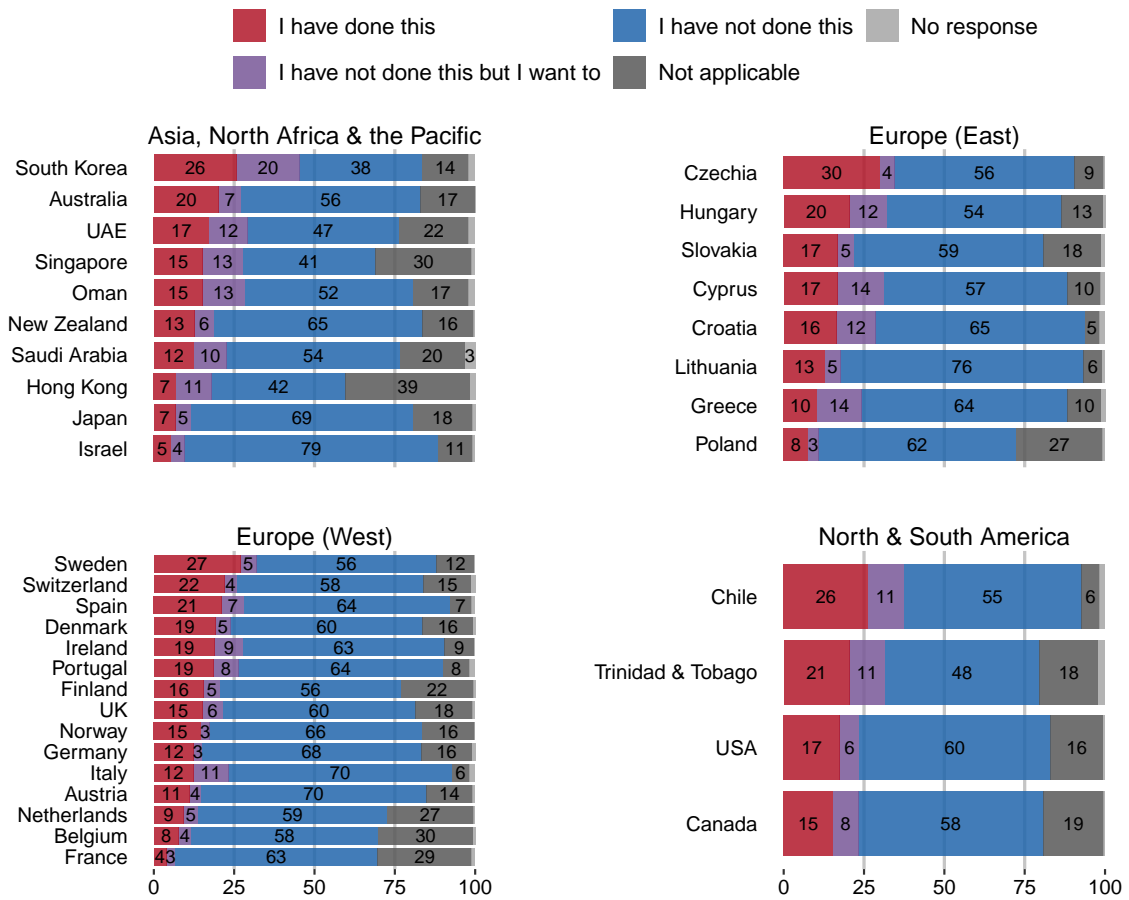


Which of the following would make it difficult for you to eat less meat? Select all that apply.

Source: Yale Program on Climate Change Communication / Data for Good a Meta / Rare's Center for Behavior & the Environment; 2023

4.1 Have you ever bought carbon offsets, which fund projects that reduce carbon?

Bought carbon offsets

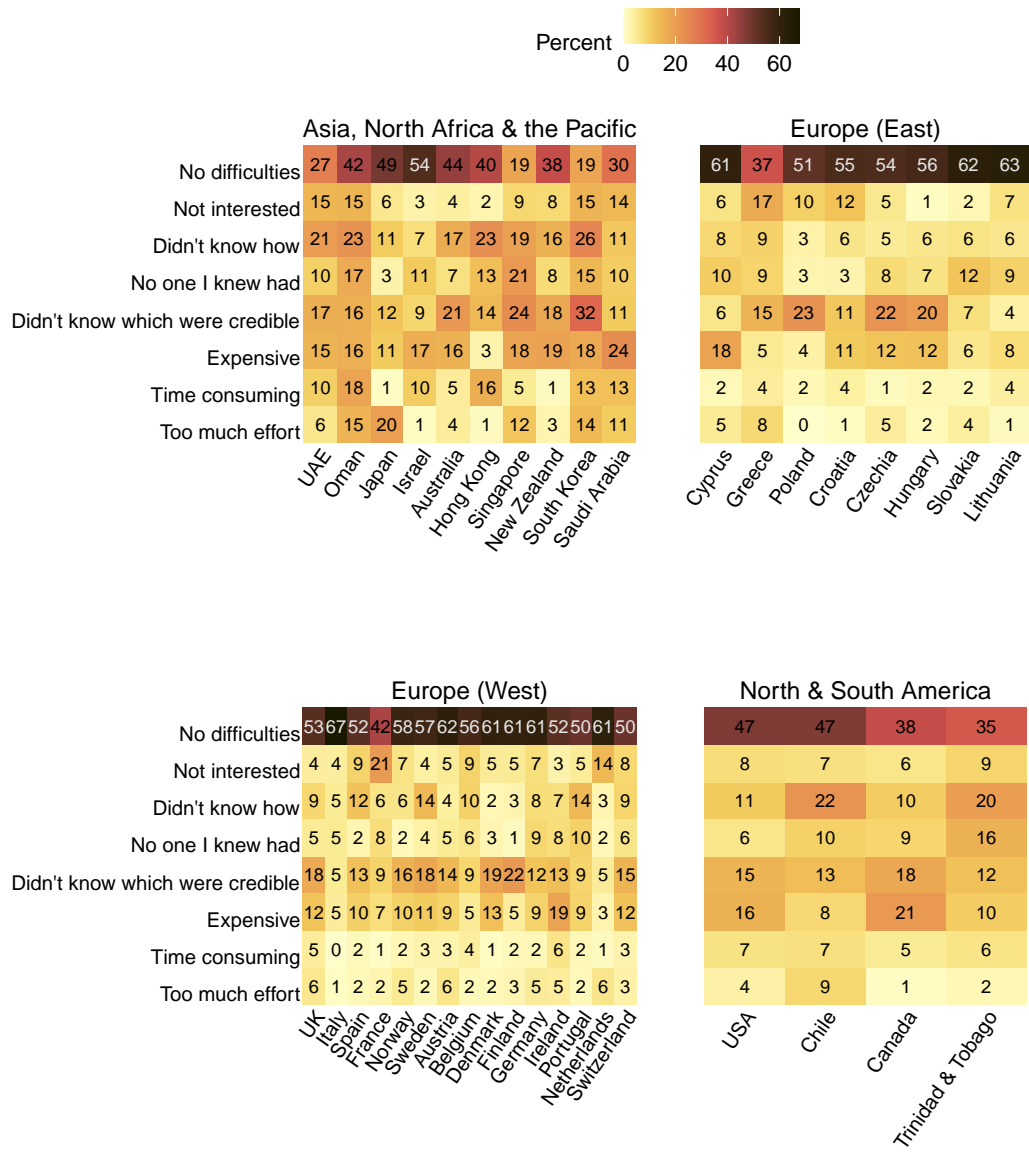


Have you ever bought carbon offsets, which fund projects that reduce carbon (e.g., planting trees)?

Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare’s Center for Behavior & the Environment; 2023

4.2 Of those who have bought carbon offsets, difficulties included...

Difficulties experienced by those who have bought carbon offsets

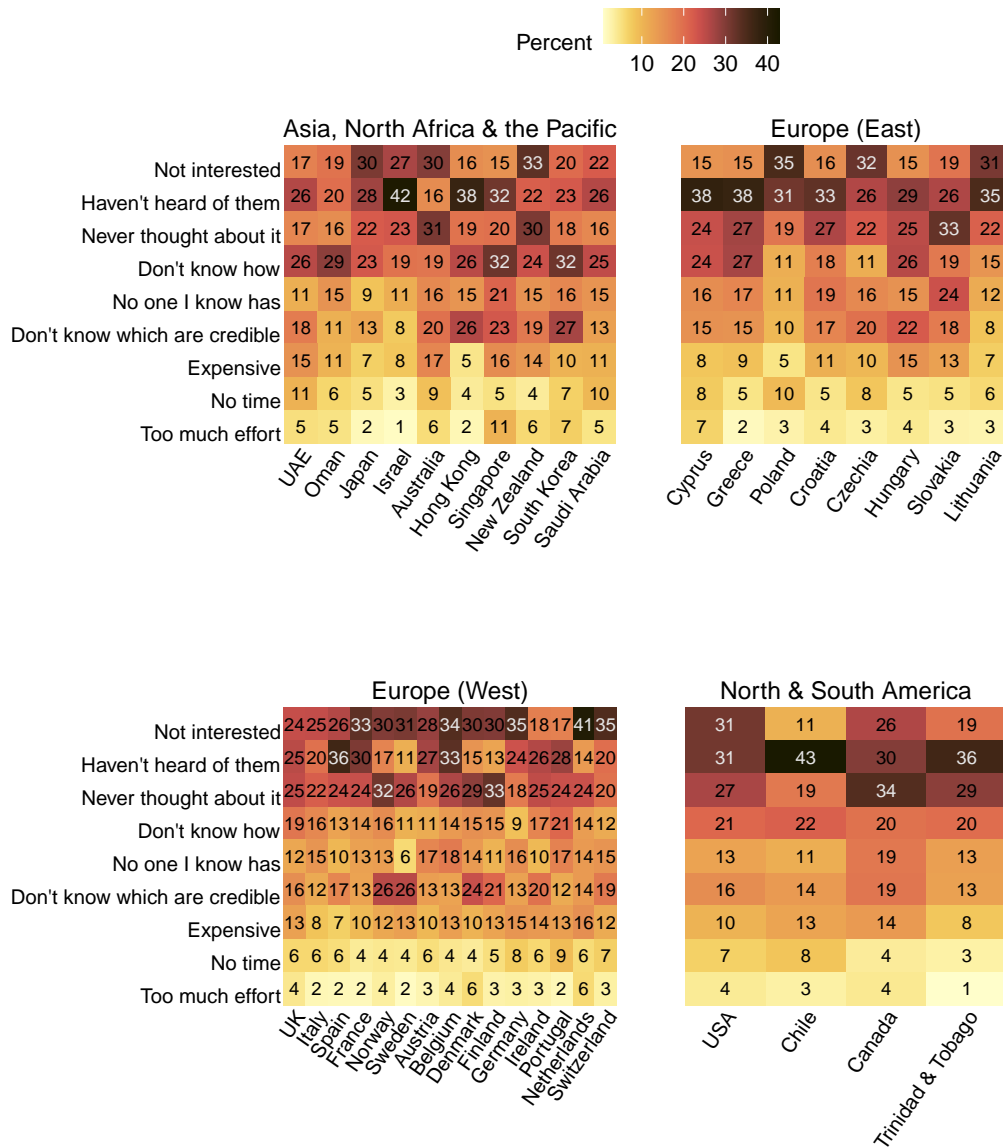


Did any of the following things make it difficult for you to buy carbon offsets? Select all that apply.

Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare’s Center for Behavior & the Environment; 2023

4.3 Of those who haven't bought carbon offsets, barriers included...

Perceived barriers to buying carbon offsets among non-adopters

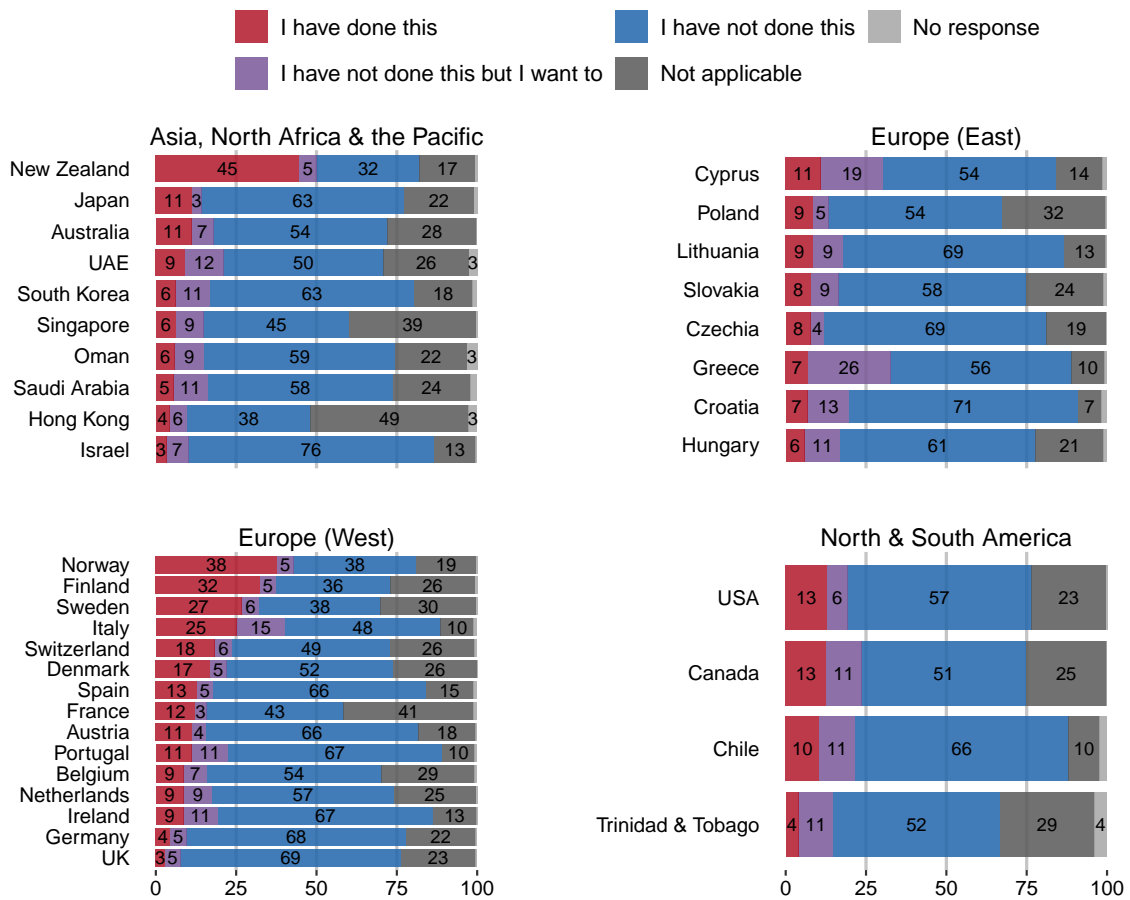


Which of the following would made it difficult to buy carbon offsets?
Select all that apply.

Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare's Center for Behavior & the Environment; 2023

5.1 Have you converted your household heating and cooling to a heat pump?

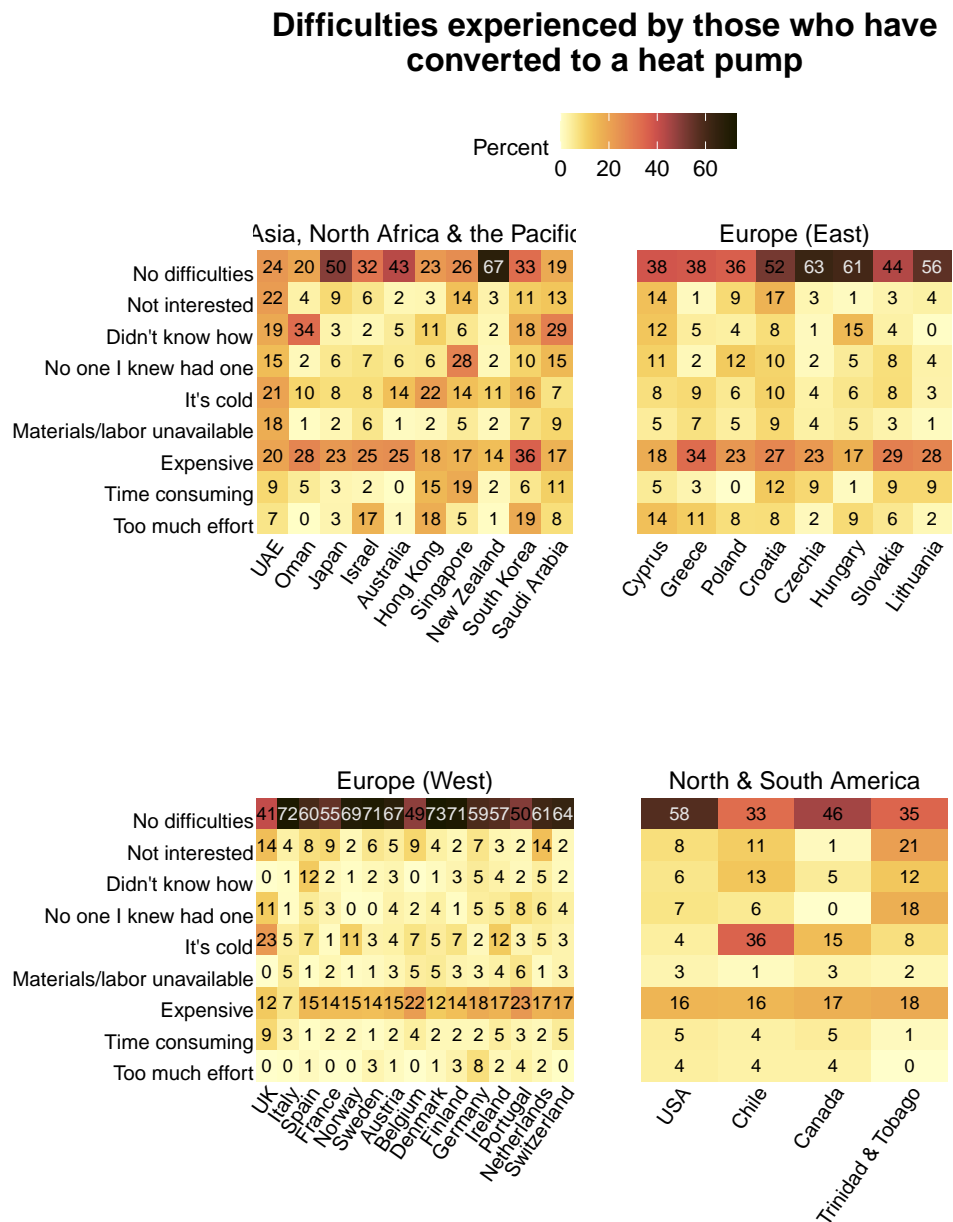
Converted household heating and cooling to a heat pump



Have you converted your household heating and cooling to a heat pump (a device that uses electricity more efficiently to heat and cool homes by transferring heat from one place to another)?

Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare’s Center for Behavior & the Environment; 2023

5.2 Of those who have converted household heating and cooling to a heat pump, difficulties included...

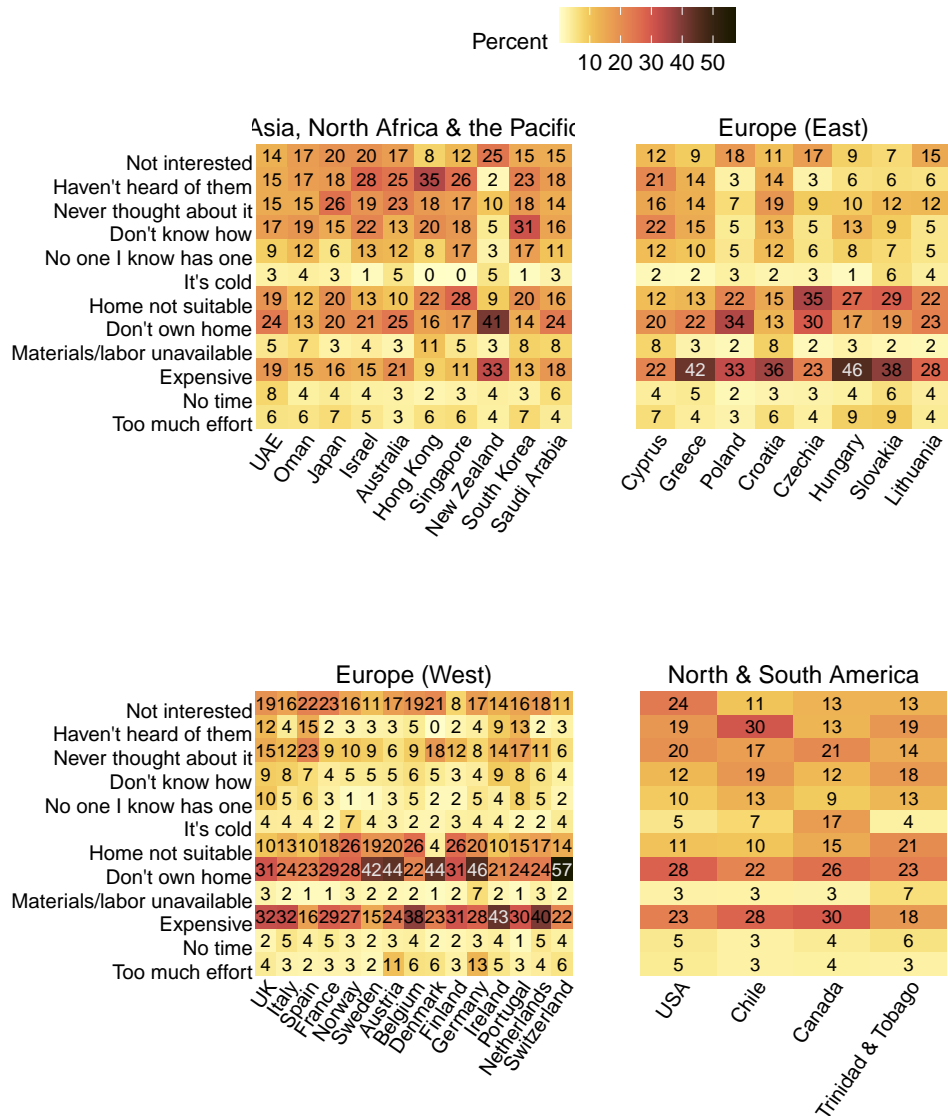


Did any of the following things make it difficult for you to convert your household heating and cooling to a heat pump? Select all that apply.

Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare's Center for Behavior & the Environment; 2023

5.3 Of those who haven't converted household heating and cooling to a heat pump, barriers included...

Perceived barriers to converting to a heat pump among non-adopters

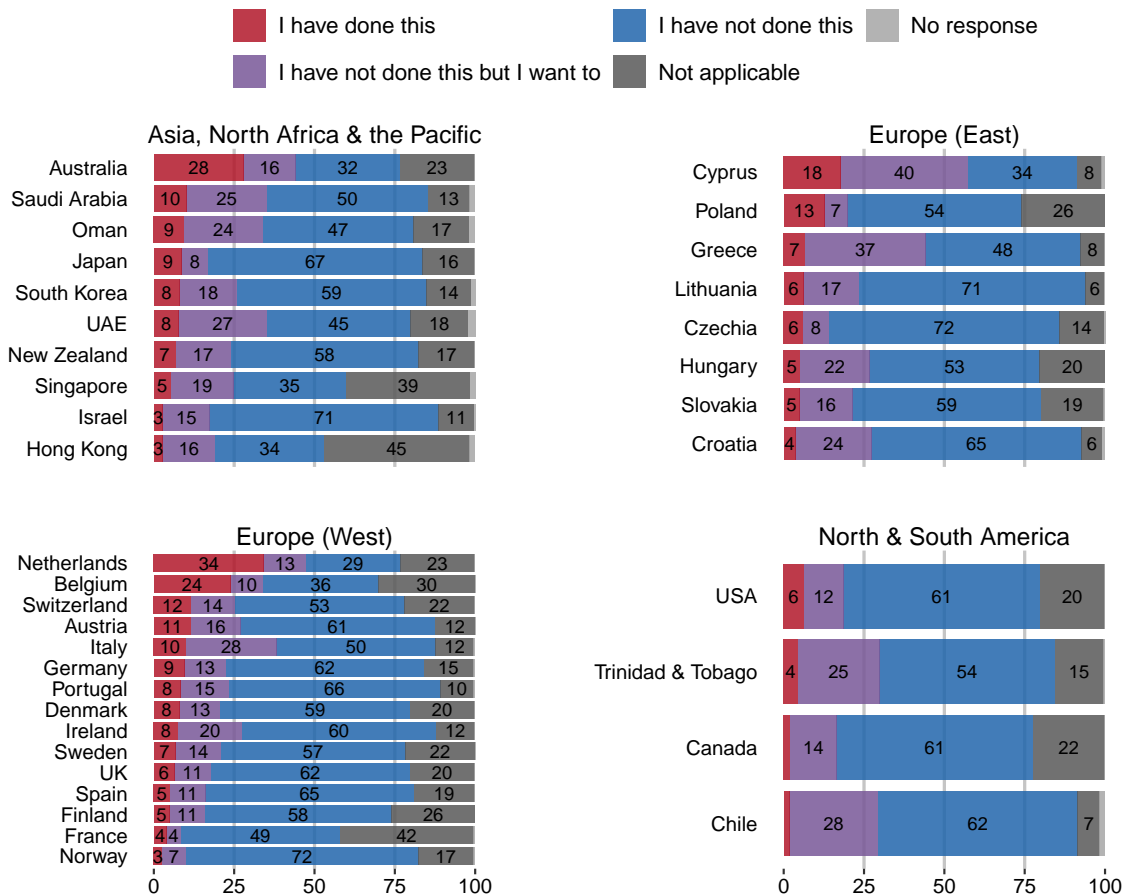


Which of the following would make it difficult for you to convert your household heating and cooling to a heat pump? Select all that apply.

Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare's Center for Behavior & the Environment; 2023

6.1 Have you converted your household electricity to come from rooftop solar panels?

Converted household to electricity from solar panels

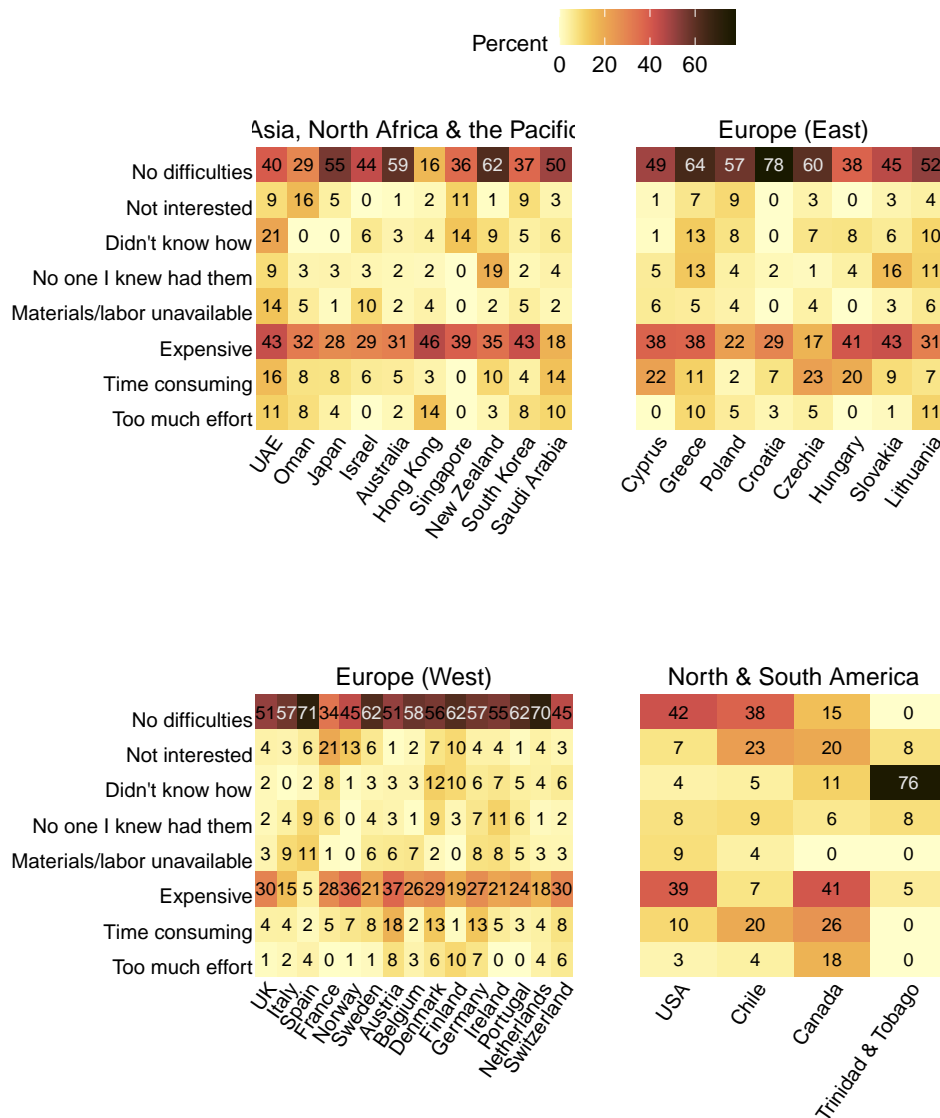


Have you converted your household electricity to come from rooftop solar panels?

Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare’s Center for Behavior & the Environment; 2023

6.2 Of those who have converted household to electricity from solar panels, difficulties included...

Difficulties experienced by those who have converted to solar panels

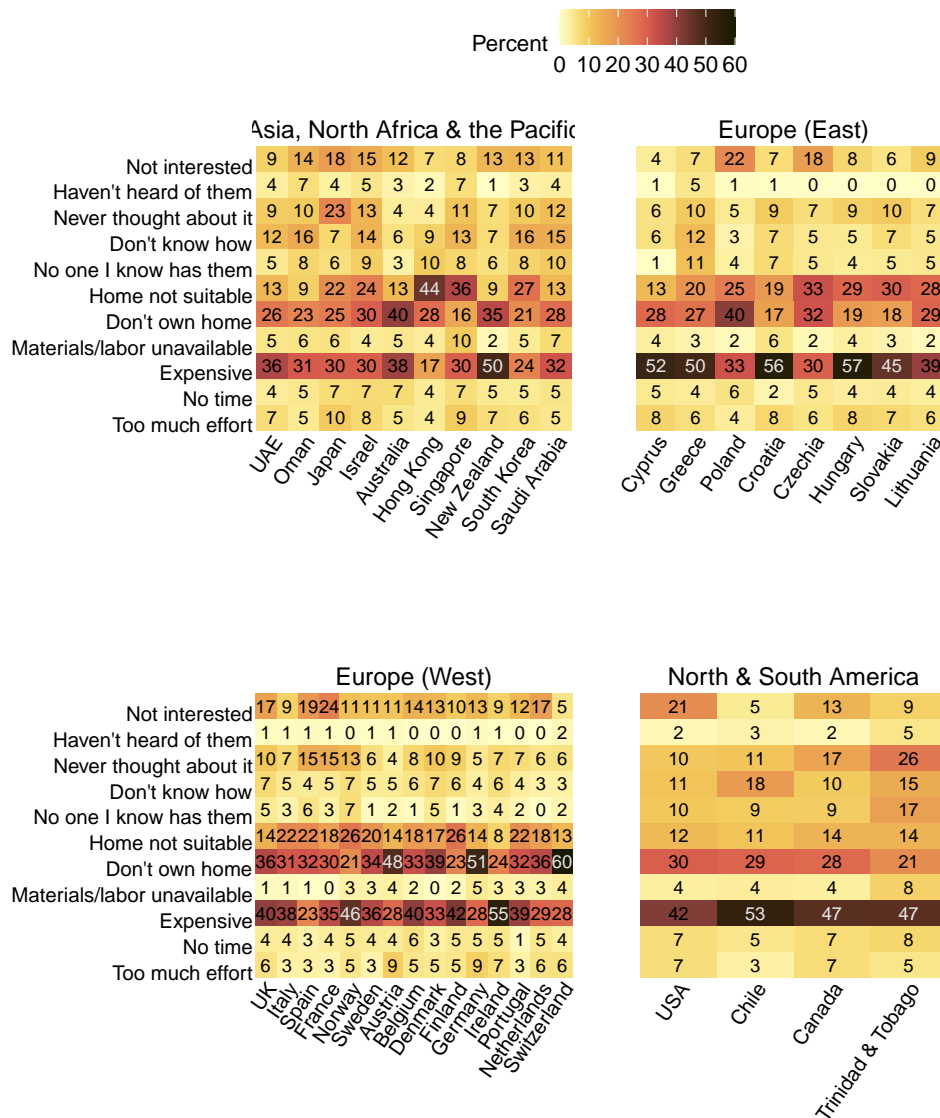


Did any of the following things make it difficult for you to convert your electricity to come from rooftop solar panels? Select all that apply.

Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare's Center for Behavior & the Environment; 2023

6.3 Of those who haven't converted household to electricity from solar panels, barriers included...

Perceived barriers to converting to solar panels among non-adopters

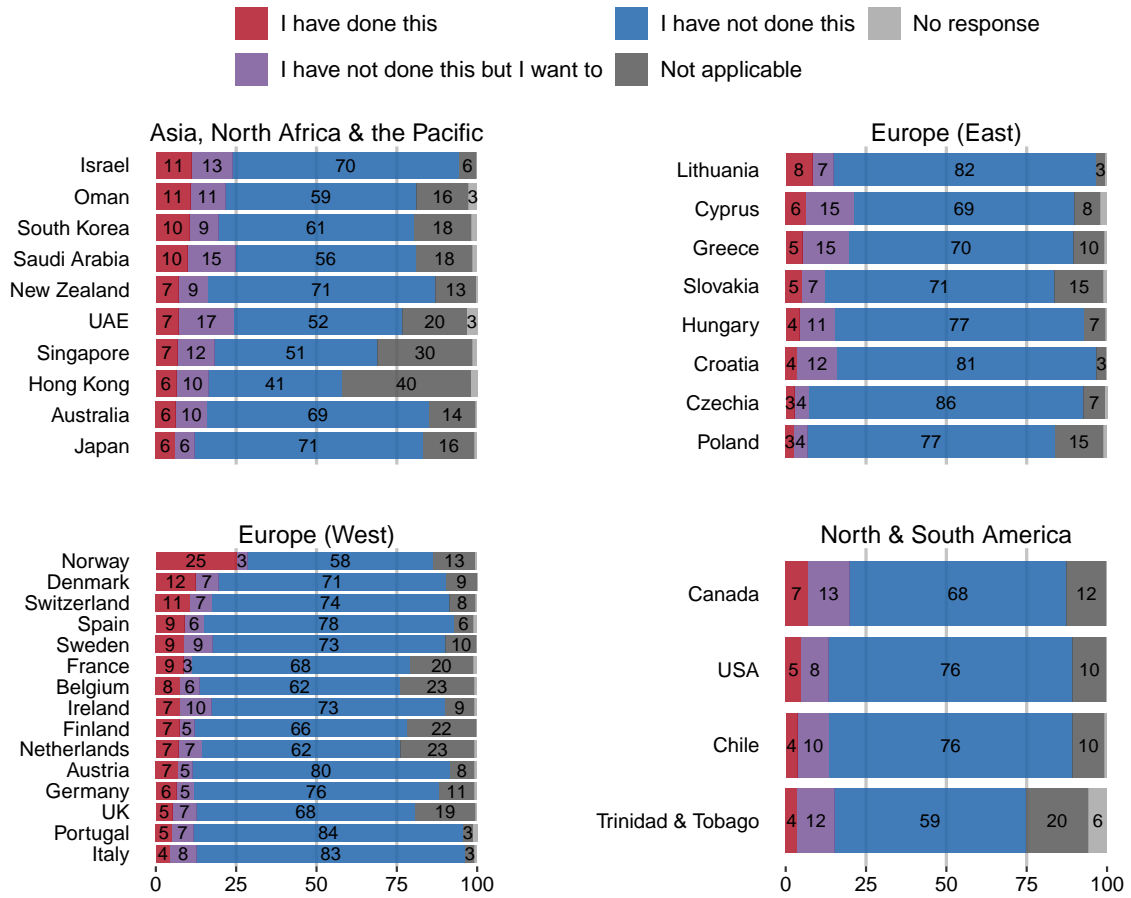


Which of the following would make it difficult for you to convert your electricity to come from rooftop solar panels? Select all that apply.

Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare's Center for Behavior & the Environment; 2023

7.1 Have you owned or leased an electric car or truck?

Owned or leased an electric car or truck

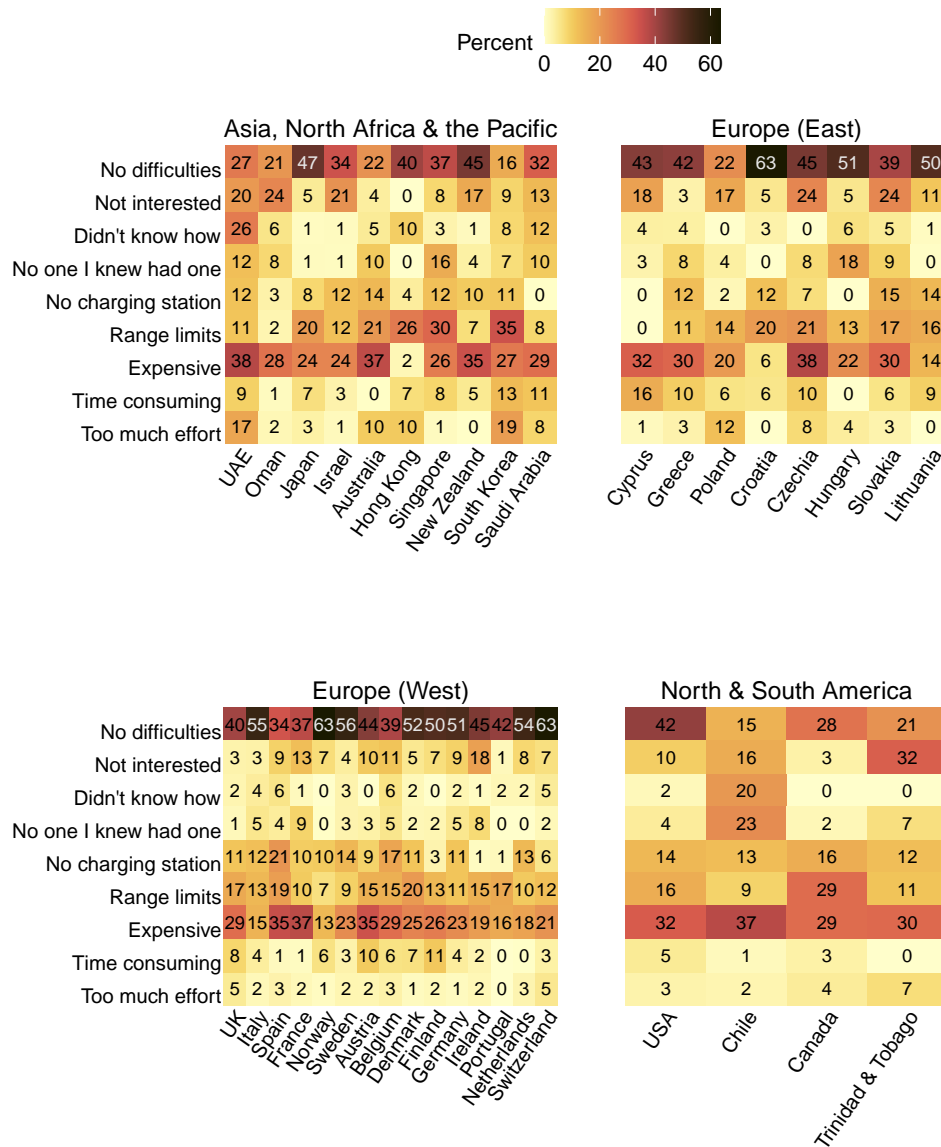


Have you owned or leased an electric car or truck?

Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare’s Center for Behavior & the Environment; 2023

7.2 Of those who have owned or leased an electric car or truck, difficulties included...

Difficulties experienced by those who have bought or leased an EV

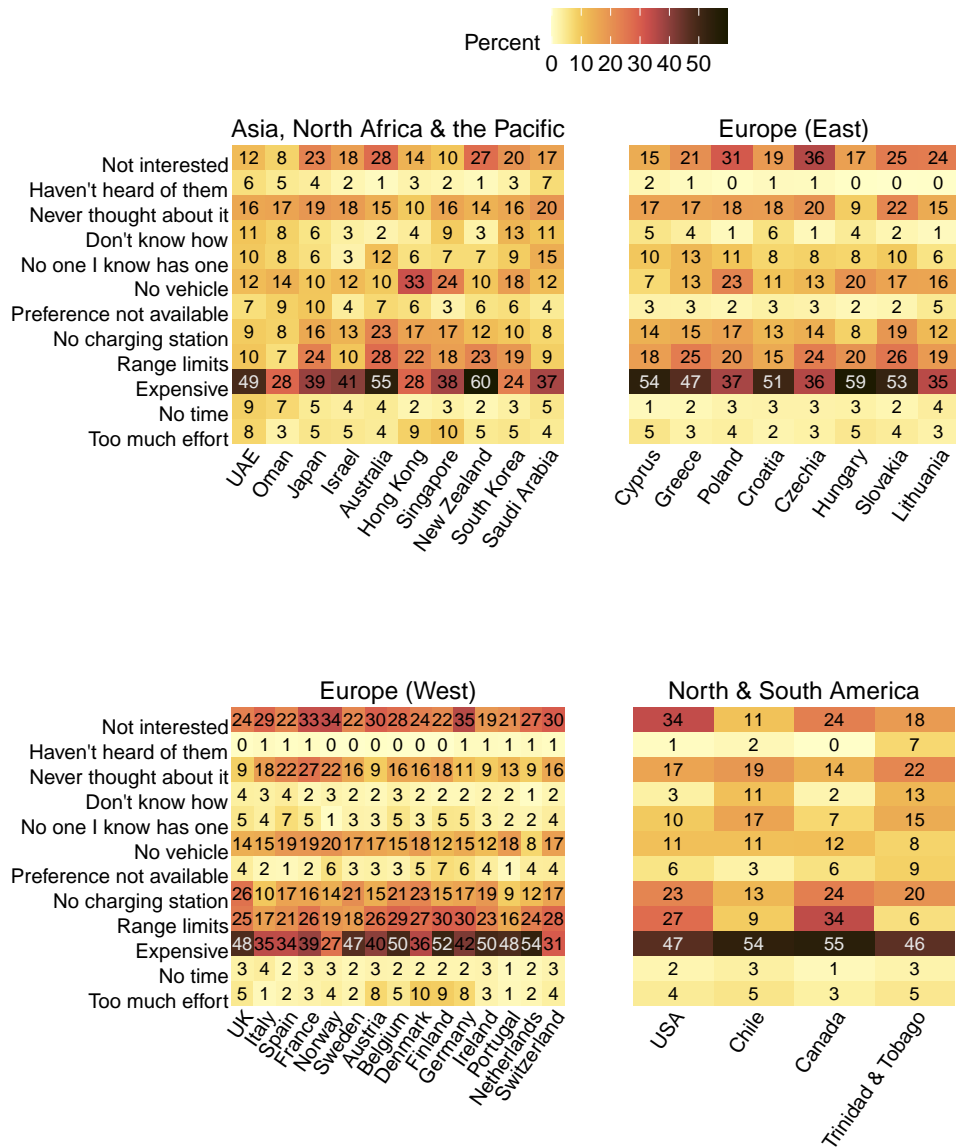


Did any of the following things make it difficult for you to own or lease an electric car or truck? Select all that apply.

Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare's Center for Behavior & the Environment; 2023

7.3 Of those who haven't owned or leased an electric car or truck, barriers included...

Perceived barriers to buying or leasing an EV among non-adopters



Which of the following would make it difficult for you to own or lease an electric car or truck? Select all that apply.

Source: Yale Program on Climate Change Communication / Data for Good at Meta / Rare's Center for Behavior & the Environment; 2023

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