Lesson 1: Display

The Main Menu option Display presents several sub-options for displaying variables in IFs. Unless otherwise specified, the information displayed will be from the IFs Base Case.

How to manipulate the Base Case to create other cases/runs or more integrated scenarios will be covered in Lesson 2.

The following text provides a brief analysis and overview of each display option. Read the descriptions, follow the links and try to answer the questions provided for each display option used in IFs. You will need to be using IFs when you work through these lessons. You may print off lessons in order to follow them closely while working or simply minimize the Help menu.

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Flexible Displays

(Use to: select from a wide range of variables and geographic units)

This display provides geographically specific information that can be displayed over time in a graph or table using the Base Case or a selected scenario. Learn more about Flexible Displays.

Explore and test your knowledge:

1. Open Flexible Displays. Select Economy GDP from the Display Category. Graph GDP at PPP (2005 currency) History plus Forecast for China and the USA.
2. How are the GDP at PPP for China and the USA forecast to change over time?
3. Graph Hard or Capabilities Power for China, USA and India. What trends emerge?

Geographically-Fixed Displays

(Use to: quickly access broad global trends that have fixed geographic specification)

This display is useful for users who want to return often to a display for specified geographic units. The forecasts can be visualized in a table or a graph. The forecasts can also be viewed as a result of one of the alternative scenarios that can be found at the bottom of the screen. Geographically-fixed Displays offer a more limited range of variables and geographic options than Flexible Displays. Learn more about Geographically-Fixed Displays.

Explore and test your knowledge:

1. Using the Base Case, is the percent of population in Sub-Saharan Africa living on less than $1.25 a day expected to increase or decrease? Graph this information for global regions using the World Bank (WB) listing of its Global Economic Prospects (GEP) to clearly see your results.
2. Using World Population as your variable, select the IFs Base Case and the Sustainability first Run-Result-File to compare. Is any difference in the forecast?
3. Do you know what parameters are changed in each of the scenarios available to you with this form? How would you find this out?

Basic Report for Countries/Regions or

Groupings

(Use to: generate a report of basic variables for a selected geographic unit)

This display shows a wide selection of basic variables for a specified country, region, or group on one screen. This information can then be displayed graphically or numerically over time. A left-click on a variable name brings up a table over time and across scenarios (the drop-down box to Select Scenario contains a list of the scenario numbers that you will see in a table and their associated names). Learn more about Basic Report for Countries/Regions or Groupings.

Explore and test your knowledge:

1. Change your display to Sub-Saharan Africa (UNDP SS Africa). How might the literacy rate change over time?
2. Switch to Report 2 and choose the USA. Compare annual water usage per capita for the year 2015 using different scenario files.
3. Using Report 2, locate the Political, Domestic section. Selecting "Democracy measure, Polity project", represent this information in a world map.

Specialized Displays for Issues

(Use to: explore unique data visualizations developed by the Pardee Center team)

These are pre-designed displays that provide focused information on a specialized topic. Our current Specialized Displays are:

1. Population by Age and Sex

This display presents demographic data as an age distribution graph, a traditional population pyramid, a fertility distribution or a mortality distribution. Learn more about the Population by Age and Sex Specialized Display.

Explore and test your knowledge:

1. Switch the display to Italy. In the first year of the model's forecasts, what would you say is the approximate ratio of females to males in the 80-84 cohort?
2. Switch the display to the Fertility Distribution for Russia. Which cohorts of the population are having more children and which are having fewer?
3. Switch the display to the Mortality Distribution for Africa & Mideast. Which sex dies at higher rates in the 0-4 cohort, males or females?

2. Birth Cohort Information

This feature allows the user to view the total population, consumption, or average education of a country, region or group broken down by generation. Learn more about the BirthCohort

Information Specialized Display.

Explore and test your knowledge:

1. How is Consumption for Generation Y in the United States forecasted to change over the next 20 years?
2. Looking at the first forecast year of the model and the Average Education Distribution, what has been the rate of change in average female education attainment for ages 15 and above from Pre-baby boomers to Generation X in China?
3. Using the Time: Advance option, what year is the population of female Baby Boomers forecasted to drop below 10 million in the United States?

3. Education by Age, Sex, and Level

This Specialized Display uses a population pyramid to show educational attainment by gender, according to 5-year age cohorts. Learn more about the Education by Age, Sex, and Level Specialized Display.

Explore and test your knowledge:

1. Select Iran. In the 20-24 year old cohort, which sex has more tertiary education? As you advance over time, what ends up happening?
2. Change your display to show the entire world. Now, advance to the year 2100. (Hint! There is a faster way to advance than simply clicking on the Advance button).
3. Display the Education Cohort for Germany. In what year do 50 percent of females in the 25-29 cohort have tertiary educational attainment?

4. Cost of Education Goals

This display identifies the costs of achieving educational goals for countries or groups. The user can select multiple scenarios to compare, and can visualize results in a table or graph. Learn more about the Cost of Education Goals Specialized Display.

Explore and test your knowledge:

1. Using India as your country, what is the forecasted education cost for gross enrollment in 2030 for 50% of the population to gain a tertiary education?
2. Under the Using Groups option, select World as your group. For 100% primary education, gross enrollment, what is the forecasted cost in 2020? What trend do you observe after 2020?

5. World Value Survey by Age

This displays data from the World Values Survey project at the University of Michigan that aims to track and understand global value trends. Learn more about the World Value Survey by Age Specialized Display.

Explore and test your knowledge:

1. From the main World Value Survey menu, select Afghanistan and toggle between the three main displays: Materialism/Postmaterialism (MATPOSTR), Survival/Self-Expression (SURVSE) or Traditionalism/Secular-Rationalism (TRADSRAT). Do you understand each of these displays? Probably not unless you explore the larger topic on this form (use the Help option to get there).
2. Choose Africa and SURVSE. Advance through time until the youngest age cohort moves from Survival into Self-expression. In what year is this forecast expected to take place?
3. Using TRADSRAT, can you find a country that has some population cohorts that are predominantly traditional and some population cohorts that are predominantly secular/rationalist?

6. Mortality by Age, Sex and Cause

The Mortality by Age, Sex, and Cause option shows the distribution of number of deaths per 1000 people for males and females and for age groups. From this display feature, users can choose to look at the forecasted levels of mortality for all countries or groups in the IFs model. Learn more about the Mortality by Age, Sex and Cause Specialized Display.

Explore and test your knowledge:

1. Use the Compare Countries sub-option to display the USA and Canada for the years 2020 and 2050. What differences in mortality causes do you see?
2. Selecting Cambodia and the year 2020, are you able to set the display to show communicable disease sub-types?
3. Globally, what is the leading cause of death for non-communicable diseases?

7. Morbidity by Age, Sex and Cause

The Morbidity by Age, Sex and Cause option shows the distribution of the number of people living with morbidities per 1000 people for males and females by age. From this display feature, users can choose to look at the forecasted levels of morbidity for all countries or groups in the IFs model. Learn more about the Mortality by Age, Sex and Cause Specialized Display.

8. Mortality Display: J-Curve

This display allows the user to view the distribution of types of mortality across various dimensions, which include grouping options, gender, years, and different scenarios. The J-Curve refers to the shape that most of the graphs have. Learn more about the Mortality Display J-Curve Specialized Display.

Explore and test your knowledge:

1. Using the Base Case, select Uganda, AIDS, and 2050 along with the initial year of the model, what changes do you see? How does Uganda compare to South Africa for the same

years?
2. Using World Bank Income groups, what trend do you observe in Mental Health mortality? Using UN Pop regions, what trends do you notice?
3. Describe the difference between adult mortality probability and adult mortality rate.

9. Mortality and Disability Years

This feature allows the user to forecast the number of years of life lost because of a given mortality type, and the years of living with a disability. Learn more about the Mortality and Disability Years Specialized Display.

Explore and test your knowledge:

1. Define what the discount rate is in this context.
2. What is the difference between HLYLD and HLYLDWORK?
3. What is the long-term trend for HLDALY for Respiratory Infections in China?

10. Development Profile

This feature is designed to explore the contribution to development from Human Capital, Social Capital, Physical Capital and Knowledge for countries, regions or groups. This information can then be forecast over time and displayed in a graph. Learn more about the Development Profile Specialized Display.

Explore and test your knowledge:

1. Find one country where human capital contributes highly to annual growth and another country where low levels of human capital hinder annual growth.
2. Create a line graph that shows years of education for South East Asia over time.
3. How substantially are France's R&D expenditures expected to grow over time?

11. World Map, Lorenz Curve, Gini, Histogram

This option allows users to display global inequality for various variables as a map, a Lorenz curve, a Gini Coefficient, or a Histogram. Learn more about the World Map, Lorenz Curve, Gini, Histogram Specialized Display.

Explore and test your knowledge:

1. Display Gross Domestic Product at Purchasing Power Parity as a world map. Change the map to display the results with an equal count in each legend category rather than in equal interval form (equal-sized intervals).
2. Produce a Lorenz Curve for Energy Demand. How equal is the distribution of energy demand across the countries and therefore people of the world?
3. The above Lorenz Curve for Energy Demand also produced a Gini Coefficient. Was this Gini Coefficient showing a relatively equal distribution of demand or a relatively unequal

distribution of demand?
4. Advance the Histogram display to 2015 using the variable Aids Deaths (AIDSDTH). Compare this to the year 2020. What changes do you see?

12. Social Accounting Matrix (SAM)

The Social Accounting Matrix (SAM) allows users to view domestic financial flows for a given country and display them over time. Learn more about the Social Accounting Matrix Specialized Display.

Explore and test your knowledge:

1. What is the total flow from American firms to the government in the year 2015?
2. How does IFs forecast the flows from Chinese households to the Chinese government? Will it increase or decrease in the future? Present this information graphically.
3. View the total flows from all of the governments of Western Europe to households as a percentage change from the first year of the IFs forecast. Display this information as a line graph.

13. World Bank Financial Flows

This option tracks monetary flows between countries and the World Bank, whether they are subscription or debt payments. For countries receiving World Bank financing, the bottom of the form will also show the general expected use of those funds. Learn more about the World Bank Financial Flows Specialized Display.

Explore and test your knowledge:

1. Pick one country that you believe may have received a lot of money from the World Bank. Graph these funds over time. Was the country you selected really receiving a lot of money?
2. Produce a graph for any given country that displays results as a percentage change from the base year for loans taken from the World Bank.
3. Switch to groups. Which AFP (African Futures Project) group has received the greatest dollar value of loans from the World Bank?

14. Infrastructure Profile

The Infrastructure Profile display shows infrastructure indicators and their contribution to productivity. The computed values are compared to expected values predicted in a bivariate relationship with GDP per Capita at PPP. From this display feature, users can choose to look at the forecasted infrastructure indicators of all countries or groups in the IFs model.

Explore and test your knowledge:

1. Within the Countries or Regions drop-down menu select Jamaica. How many roads per capita do they have and how many does the model expect them to have?

2. In what infrastructure indicators does Jamaica surpass expected values predicted by its GDP per Capita at PPP? Where does it fall behind the expected values?
3. Why might a country like Jamaica exceed the expected Rural Access Index (% of rural population)? The Rural Access Index measures the % of rural population living within 2 km of an all-season road.

15. SDG Overview Table

The SDG Overview Table option shows a number of indicators for each of the 17 Sustainable Development Goals and their values within the base year of IFs. A reference scenario, intervention scenario you may have created, and year can be selected from the drop-down menus to look at projected values of indicators. In most cases, you will want to leave the reference scenario as the IFsBase which is the current path. Within this display you can compare how proposed interventions may help or hurt a country reach the target SDGs.

Explore and test your knowledge:

1. Within the Countries or Regions menu select India. Select Year 2035. Select Reference Scenario IFsBase. Select Intervention Scenario C19NoCovid. In this case, our intervention scenario is not actually an intervention but a counterfactual to imagine the path the world would be on if the COVID-19 pandemic never occurred.
2. Let's compare the base case against the counterfactual to see how the Covid-19 pandemic has affected India's projected path towards the Sustainable Development Goals. Which indicators had India been on the path of meeting by 2035 that it is now projected not to be able to meet?
3. As you look through this comparison, conceptualize the connections between these different indicators. How might the percentage of population living below the $1.90 poverty line be connected to the secondary education graduation rate?

16. SDG Graph

The SDG Graph display shows a graph that can be customized the view progress on achieving the 17 Sustainable Development Goals. From the drop-down menu, select the goal you would like to graph, as well as the target, and indicator. When selected, a definition of each target and indicator will appear below the drop-down boxes. Then select the country that you want to analyze. Below the graph you can then select either the Base scenario, working file, or another scenario you have run to see how the country is projected to do relative to the SDG target.

1. Select Goal 4: Education. Target 4.1. Indicator 4.1.1a. Select Cameroon as the country with the IFsBase.run.db selected below. Look at the graph that appears and compare the Base Case line to the SDG goal line.
2. Is Cameroon projected to meet the SDG target by 2030?
3. Which year is Cameroon projected to meet this SDG target (value of 97)?

17. Poverty Level Display

This feature visually displays forecasts of populations, by number and percent, who live under a certain monetary constraint within a geographically bound region. Learn more about the Poverty Level Specialized Display.

Explore and test your knowledge:

1. How many million people may be living on less than $1.25 a day in Gabon in 2020?
2. How many million people may live on between 10 and 50 dollars a day (often considered the middle class range) in India in 2040?
3. By how much is the income per day of China's poorest 10th percentile forecasted to change between 2020 and 2040?

18. Advanced Sustainability Analysis

This feature of the Specialized Display was developed by the Finland Futures Research Centre and it tracks specific, sustainability-oriented development indicators. Learn more about the Advanced Sustainability Analysis Specialized Display.

Explore and test your knowledge:

1. Look at different countries/regions until you find the highest producer of carbon emissions. Graph this over time.
2. Determine how the impact/intensity of fossil fuel use per thousand people will change over time for Bangladesh.
3. Present the above information in a bar graph.

Activate Pre-Run Scenario for Display

(Use to: explore the full range of IFs variables and parameters)

This feature activates previously-run scenario files (alternative scenarios other than a set of pre-selected scenarios in the model) and makes them available for all display options including the Flexible Displays and the Self-Managed Display. Note that this is an option only available in the web version of IFs. Learn more about Activate Pre-Run Scenario for Display.

Explore and test your knowledge:

1. Activate the Low Population scenario under Framing Scenarios/Population. Open Flexible Displays from the IFs Main Menu. Where can you find the scenario you have just loaded?
2. Using GDP per Capita at PPP as your variable and World as your group, select the IFs Base Case and the Low Population Run-Result-File to compare. Is there any difference in the forecast?
3. Can you load and run the same scenario file in the Quick Scenario Analysis with Tree form? Which feature, between Activate Pre-Run Scenario for Display and Quick Scenario

Analysis with Tree, gives you more flexibility in terms of developing interventions? Which of the two is faster? Why?

Self-Managed Display

(Use to: explore the full range of IFs variables and parameters)

This is the most flexible and complete display. It allows the user to display any variable or parameter in the model in any display format. Computational options further allow combinations and transformations of variables. Learn more about Self-Managed Display.

Explore and test your knowledge:

1. Produce a graph that shows GDP at PPP for a number of countries in which you have interest. How do the different scenario files change the forecasts?
2. Explore the variables computed in IFs. Find one of specific interest to you and experiment with it.
3. Prepare a display of the scatter plot form showing total fertility rates and levels of educational attainment for all countries. What patterns emerge?
