BRITANNICA GLOBAL GEOGRAPHY SYSTEM

Overview

BGGS Overview

BGGS is the ***Britannica Global Geography System,*** a modular electronic learning system which combines the latest pedagogical approach to geography learning with interactive multi-media materials enabling students and teachers to immerse themselves in exciting geographic investigations. BGGS is made up of the following components:

- *Geographic Inquiry into Global Issues* (GIGI) Student DataBooks
- Teacher's Guides with Overhead Transparencies in a three-ring binder
- Laminated Mini-Atlases to accompany each module
- BGGS CD-ROM with User's Manual
- 3 BGGS Videodiscs with Barcode Guides
- 3 thematic posters

This section of your Teacher's Guide will examine each component and demonstrate how the components work together to facilitate some very exciting geography learning for you and your students!

I. GIGI

Geographic Inquiry into Global Issues (GIGI) is the foundation of the BGGS. GIGI is a series of modules developed at the Center for Geographic Education at the University of Colorado at Boulder. The modules are independent of one another and can be presented in any order.

They use an inquiry approach and are organized around ten world regions:

South Asia
Southeast Asia
Japan
Former Soviet Union
East Asia
Australia/New Zealand/Pacific
North Africa/Southwest Asia
Africa-South of the Sahara
Latin America
Europe

Each GIGI module is centered around a particular question, such as "Why are people in the world hungry?" and "Is freedom of movement a basic human right?" The lead question is explored in one region of the world, then, in most modules, in a second region, before being investigated in North America.

The modules can be used in geography classes, or selected modules can be used in other courses, such as Earth Science, Global Studies, or Economics. Twelve modules constitute ample material for a full year's geography course. Each module is accompanied by sets of laminated mini-atlases which students can write on with dry-erase markers (provided by the teacher), then wipe clean to be re-used by the next class. This activity works well with cooperative groups of students.

Each module comprises a Teacher's Guide in a three-ring binder which includes Handouts and Activity masters for duplication and Overhead Transparencies; twenty-five Student DataBooks (additional Student DataBooks available) and the Mini-Atlases all packaged in a sturdy box suitable for storage when the class moves on to the next module. Since the Student DataBooks are soft-covered three-hole punched, non-consumable books, we recommend that each student have a binder to protect them. BGGS binders are available from Britannica, or you might ask each student to obtain one at the beginning of the course to keep the books in good condition for the next group of students that will use them. As the class completes a module, you can collect the Student DataBooks, place them in their storage box, and distribute the next module's DataBook to be placed in the student's binder.

GIGI print materials are organized in a unique fashion. The Teacher's Guide explains procedures to use in presenting the material found in the GIGI Student DataBook. Miniature layouts of student pages show the teacher how many pages of student material correspond with a given Teacher's Guide page. The Teacher's Guide includes Activities and Handouts to be copied and passed out to the class and Overhead Transparencies to enhance each lesson. All of a module's Activities, Handouts, and Overheads are located behind the third tab divider in each Teacher's Guide.

The teacher needs to become familiar in advance with both Teacher and Student material in order to effectively engage the class in meaningful geographic inquiries. There is a comprehensive "Memo to the Teacher from the GIGI Staff" in each Teacher's Guide which explains in detail the goals and principles behind the inquiry approach to geography learning.

The electronic components of the ***Britannica Global Geography System*** further empower students and teachers alike to engage in meaningful investigations. They are explained in detail in the following section.

II. BGGS CD-ROM

The **BGGS CD-ROM** is a resource manager and reference tool designed to help both teachers and students get maximum impact from the ***Britannica Global Geography System.*** This CD-ROM contains the text of the GIGI Student DataBooks in both Spanish and English, as well as Britannica's innovative geography reference program Geopedia™ all on a single disk. Here are some of the ways you and your class can use this software:

- When preparing to teach a module, you can access the GIGI Student DataBook on the CD to find which other elements of the BGGS are keyed to that lesson. For example, if you are teaching Lesson 3 in the Population and Resources module (What is overpopulation and how is it distributed?), accessing that lesson on the CD-ROM will reveal that there is one clip on the *Economic Development* videodisc called "Population/Wealth Correlation." With this information, you can plan when to reserve your department's videodisc player to preview the clip and show it to your class.

Furthermore, you will discover that there is one GIGI mini-atlas activity related to this lesson, five articles in the Geopedia database, ten entries in

Geopedia's World Data, five maps in the Geopedia Atlas, and five learning activities in the Geopedia BrainTeasers. You may want to assign each student or small group of students a research project using these extra resources to be done over the course of the module, or you can create a set of questions which the students must complete using the information found in Geopedia.

These activities can serve as a performance-based assessment of what students have learned in studying each module.

Since many schools have a limited number of computers with CD-ROM drives available, you may wish to devise a rotating schedule or sign-up system to ensure that each student has a chance to get at the BGGS CD-ROM. If it takes 15 class periods for a class of twenty-five students to do one module, students working in pairs can each have one turn at the computer if they schedule their time at the outset of the module. Using the CD-ROM's resource managing capability, you will have a very good sense of what resources you have at your disposal and how to make the most of them.

- All GIGI lessons are indexed by word and by key topic. If your class is studying food shortages in the Hunger module, you can key in the word hunger, and immediately learn where else in the GIGI modules this word or key topic appears. You can go directly to those occurrences in the text. You will also be directed to appropriate Geopedia references and Brain Teaser activities. Figures, Maps and Tables from GIGI print modules do not appear in the CD-ROM. However, the caption describing each of them is part of the online text.
- If Spanish is the primary language of your students, GIGI lessons can be accessed and printed out in Spanish from the BGGS CD-ROM. The BGGS Videodiscs have a Spanish soundtrack as well.

III. BGGS Videodiscs

More than ever before, today's students are visual learners. The GIGI modules explore issues and regions of the world with which many students are unfamiliar. With this in mind, we have produced three videodiscs, one to correspond to each of three major strands we have identified in GIGI: *Earth's Environment and Society; Economic Development;* and *Global Political and Cultural Change.*

These videodiscs, with English and Spanish soundtracks, can take you and your class to the parts of the world you are investigating with the wave of a barcode wand. Your class will hear how Amazon native peoples feel about the exploitation of the tropical rain forests where they live, witness the eruption of a volcano, and see first-hand the environmental disasters human beings have brought about.

The Barcode Guide which accompanies each disc enables you to access with a light pen or barcode reader, segments which pertain to the lesson being investigated. The Guide includes barcodes in both English and Spanish. Teachers can use the segments to enrich lessons, and students can make use of segments to enhance a report or group presentation.

There is a full-color poster to accompany each videodisc cluster which engages the students by asking "How do these images connect to you?" The posters can provide a colorful springboard for classroom discussion.

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BRITANNICA GLOBAL GEOGRAPHY SYSTEM

GIGI

Geographic Inquiry into Global Issues

Population Growth

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TEACHER'S GUIDE

Regional Case Study
East Asia

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Contents

Memo to the Teacher from the GIGI Staff

You have in your hands the GIGI Teacher's Guide. Teaching with GIGI is a departure from teaching with a conventional textbook. By taking the time to study this memo—about 30 minutes—you will gain a good understanding of the kind of teaching that's needed to be successful with GIGI. We hope you have a rewarding and enjoyable experience!

Goals

The three major goals of *Geographic Inquiry into Global Issues* (GIGI) are to help you teach your students the following:

1. Responsible citizenship
2. Geographic knowledge, skills, and perspectives
3. Critical and reflective thinking

We believe you can accomplish these goals as well as others by teaching real-world issues. GIGI presents these issues with an inquiry approach, using the information, concepts, skills, and perspectives of geography.

GIGI and the Britannica Global Geography System

GIGI offers you two instructional modules for each of ten world regions (Figure 1 on pages vi and vii). There is no necessary sequence of modules; each one is independent, so you can use them in any order you wish or put together smaller clusters of modules to fit your needs. A leading question frames the issue of each module, and student inquiry proceeds through a sequence of lessons, each of which requires one or more daily periods of class time.

Color photographs at the beginning and end of each Student DataBook graphically illustrate the topic under inquiry.

Modules typically begin with a broad introduction to the global issue. Then, a major case study of three to four lessons examines the issue in a real place within the selected world region. Students also explore, usually in a single lesson, a comparative case study in a *different* region, which gives a variant of the issue and a sense of its global nature. Modules also bring the students "back home" to focus on the issue as it may appear in the United States or Canada. We do this because although North America is not one of the 10 GIGI

regions, frequent comparisons to North America throughout each module achieve additional instruction on this "home region."

Each GIGI module requires from two to three weeks of teaching time (10 to 15 class periods of 50 minutes) and contains a Student DataBook, Teacher's Guide, and Mini-Atlas. These GIGI print materials are at the heart of the Britannica Global Geography System (BGGS), which extends and enhances the inquiry approach to real-world issues with a CD-ROM and three videodiscs.

The BGGS CD-ROM puts the text of the GIGI Student DataBooks on line in both English and Spanish, then enables both teacher and students to search the text by lesson, key topic, or word to find the resources in the system that will enhance each. Geopedia™, Britannica's multimedia geography program, is provided in the CD-ROM for follow-up research. It features an atlas with more than 1,000 new maps, an encyclopedia with more than 1,200 geography-related articles, statistical information on every country from Britannica World Data Annual, a chartmaker for creating charts and graphs, a selection of video clips exploring cities and regions, and an electronic notepad allowing teachers and students to clip and edit text right on the screen.

Three videodiscs, designed to electronically transport students to the regions of the world where GIGI case studies are focused, are another part of the BGGS. The discs emphasize three major strands of the GIGI investigations: *Earth's Environment and Society, Economic Development,* and *Global Political and Cultural Change.* Each videodisc has two soundtracks, English and Spanish, and is accompanied by a Barcode Guide that enables teachers and students to access the segments that accompany the GIGI lesson with a wave of the barcode reader. A poster accompanies each videodisc to reinforce the connections between your students and the issue being studied.

A full explanation of the Britannica Global Geography System components and how they work together is located in the BGGS overview in the front section of this Teacher's Guide.

Geographic Inquiry into Global Issues (GIGI)

Issues, Leading Questions, and Case Study Locations

South Asia	**Population and Resources** *How does population growth affect resource availability?* Bangladesh (Haiti)	**Religious Conflict** *Where do religious differences contribute to conflict?* Kashmir (Northern Ireland, United States)
Southeast Asia	**Sustainable Agriculture** *How can the world achieve sustainable agriculture?* Malaysia (Cameroon, Western United States)	**Human Rights** *How is freedom of movement a basic human right?* Cambodia (Cuba, United States)
Japan	**Global Economy** *How does the global economy affect peoples and places?* Japan (Colombia, United States)	**Natural Hazards** *Why do the effects of natural hazards vary from place to place?* Japan (Bangladesh, United States)
Former Soviet Union	**Diversity and Nationalism** *How do nations cope with cultural diversity?* Commonwealth of Independent States (Brazil, United States, and Canada)	**Environmental Pollution** *What are the effects of severe environmental pollution?* Aral Sea (Madagascar, United States)
East Asia	**Population Growth** *How is population growth to be managed?* China (United States)	**Political Change** *How does political change affect peoples and places?* Hong Kong (South Korea, Taiwan, Singapore, Canada)

Figure 1 Matrix showing GIGI modules. Geographic issues are in bold and leading questions are in italics. Major case study locations are followed by comparison examples in parentheses.

Geographic Inquiry into Global Issues (GIGI)

Issues, Leading Questions, and Case Study Locations

Australia/ New Zealand/ Pacific	**Global Climate Change** *What could happen if global warming occurs?* Australia and New Zealand (Developing Countries, U.S. Gulf Coast)	**Interdependence** *What are the causes and effects of global interdependence?* Australia (Falkland Islands, United States)
North Africa/ Southwest Asia	**Oil and Society** *How have oil riches changed nations?* Saudi Arabia (Venezuela, Alaska)	**Hunger** *Why are people hungry?* Sudan (India, Canada)
Africa—south of the Sahara	**Building New Nations** *How are nation-states built?* Nigeria (South Africa, the Kurdish nation)	**Infant and Child Mortality** *Why do so many children suffer from poor health?* Central Africa (United States)
Latin America	**Urban Growth** *What are the causes and effects of rapid urbanization and urban growth?* Mexico (United States)	**Development** *How does development affect peoples and places?* Amazonia (Eastern Europe, U.S. Tennessee Valley)
Europe	**Regional Integration** *What are the advantages of and barriers to regional integration?* Europe (United States, Mexico, Canada)	**Waste Management** *Why is waste management both a local and global concern?* Western Europe (Japan, United States)

Figure 1 (continued)

The **Student DataBook** contains the following features:

- Memo to the Student from the GIGI Staff
- An overview of the key questions and places explored in the module
- Lesson objectives
- Data presented in a variety of forms, including text, maps, graphs, tables, photographs, and cartoons
- Questions
- Glossary
- References

Students are not expected to learn the GIGI curriculum through the Student DataBook alone. Rather, they derive meaning from the DataBook when you use the Teacher's Guide to work through the curriculum with them. You may want to explain this process to students. Point out that you will be directing them to carry out various activities that are not specified in their text but are important in the sequence of learning.

Prior to teaching the first lesson, be sure students read the "Memo to the Student from the GIGI Staff" and the two-page overview, which gives the module's objectives in question form. Point out the Glossary and encourage its use as you work through the module, noting that glossary words are listed at the beginning of each lesson. So that students will know what they are expected to learn, they need to read carefully and understand the objectives listed at the beginning of each lesson.

This **Teacher's Guide** contains the following sections:

- Preparing to Teach This Module, a synopsis of the module's leading question, themes, and activities
- Module Objectives
- Number of Days Required to Teach the Module
- Suggestions for Teacher Reading
- Extension Activities and Resources

Most lessons include the following sections:

- Time Required
- Materials Needed
- Glossary Words
- Getting Started (suggested anticipatory sets)
- Procedures (for group and individual work)
- Modifications for older or younger students (in a different type face, printed in color)
- Questions and Answers (shown in tinted boxes)
- For Further Inquiry (suggestions for extensions and/or assessments)

- Masters of Overhead Transparencies and Activity masters and keys (located at the back of the Teacher's Guide)

Each module has its own accompanying **Mini-Atlas,** which provides four-color maps designed especially for use with that module. The Teacher's Guide explains how to use these maps. No additional atlases are required to teach the module, but large wall maps are highly recommended for your classroom. In addition to the maps in the Mini-Atlas, you will find numerous maps in the Student DataBook.

Intended Grade Levels

We believe GIGI enables you to probe global issues in various degrees of depth. This allows for the modules' use both over several grade levels (7–12) and over varying lengths of time at a grade level. The Teacher's Guides suggest alternatives for modifying instruction for different grade levels where appropriate. The reading level varies within each module: The Student DataBooks are approximately at grade 9 level, but some extracts from other sources are more challenging. These extracts are important because they show students that many people have contributed to the data, but younger students may need more time and help to understand them. The Teacher's Guides also include extension activities and resources that can maximize the grade-level flexibility of each module. Using the visuals included in the BGGS videodiscs and the activities built into the CD-ROM, you can further tailor instruction to your students. Obviously, you will determine whether particular lessons suit your students' abilities. When a range of required teaching time is given for a module, for example, 10 to 12 days, the greater amount of time should be planned for younger students. If you believe a lesson might be too difficult for your students, eliminate or simplify it. Rarely will the elimination of a lesson render a module ineffective. On the other hand, try to utilize the suggested extensions if the lesson does not adequately challenge your students.

Issues-Based Geographic Inquiry

In order to foster active learning and higher-level thinking, GIGI stresses issues-based geographic inquiry. Inquiry is essentially the method of science and of good detective work: It poses questions and proposes answers about the real world and it tests its answers with real data. Students do this with GIGI. Because this approach may be different from what students are familiar with, you may wish to pre-

pare them by describing the process and its connection to the real world. Also, their reading and discussion of the "Memo to the Student from the GIGI Staff" will help them understand the inquiry approach. GIGI is based on Frances Slater's inquiry activity planning model (1993). To reach GIGI's goals, your students study specific global issues by pursuing answers to geographic questions (Figure 2). They answer these questions by analyzing and evaluating data, using geographic methods and skills. This "doing geography" approach leads to significant outcomes in knowledge, skills, and perspectives. The progression from questions to generalizations "is crucial as a structure for activity planning and as a strategy for developing meaning and understanding. Meaning and understanding define the process of tying little factual knots of information into bigger general knots so that geography begins to make sense, not as a heap of isolated facts but as a network of *ideas and procedures*" (Slater 1993, page 60).

In truly free inquiry, students work independently, but with GIGI posing questions and providing data, you and your students explore the issues together. This approach supports and encourages your students in learning geography.

By using issues-based inquiry, you promote the development of a critical perspective in your students. They learn the habits of critical and reflective thinking. Multiple and opposing positions are inherent

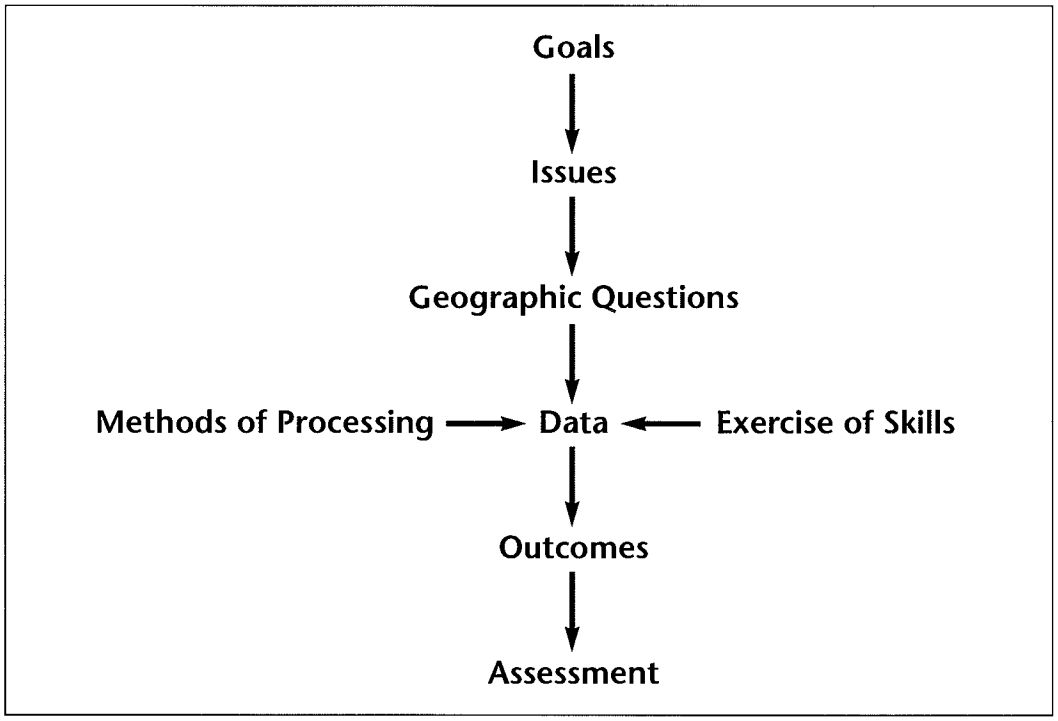

Figure 2 GIGI's model for issues-based geographic inquiry (after Slater 1993).

in these issues. Facts can be used to support different points of view. This is the context in which the habits of the critical perspective can develop, and *interpretation* is the key activity. With GIGI you foster these habits and abilities as you help your students interpret data guided by hypotheses, propositions, arguments, or questions.

An essential element of data-based, issues-oriented inquiry is to challenge your students by giving them opportunities to

- raise new questions,
- question the quality of the data,
- seek more useful or current data,
- articulate relationships they perceive,
- explain their processes of investigation, and
- defend their positions, decisions, and solutions.

Why These Issues Were Chosen

In planning GIGI, we sought timeless issues that are truly global in scope and that are of special concern to geographers. In this way, GIGI fosters what the National Geography Standards calls "the geographically informed person" needed by modern global citizenry (Geography Education Standards Project 1994).

The major case study, chosen to give solid grounding to the issue, is focused on a region where the issue is clearly expressed. The secondary case studies, based in other regions including the United States and Canada, show the *global* scope of the issue.

It is important to stress that, although GIGI contains a wide selection of case studies in all major regions (Figure 1) as well as frequent references to the global distribution of many geographic phenomena, GIGI is not a traditional regional geography. It does not attempt to provide basic geographic information for each region, such as one finds in traditional regional geography textbooks. In teaching a GIGI module, it is important to keep the emphasis on the issue and not get distracted with extraneous regional information.

Role of Questions

Each GIGI module is divided into six to eight lessons, each titled by a question; subquestions head individual sections of the lessons. Questions guide inquiry in order to merge the process of investigation with the drawing of conclusions. Directly linking questions and answers helps achieve an intellectually satisfying understanding of a problem (Slater 1993). When students are asked to learn only conclusions without learning how they are drawn, we perpetuate the tradition of an answer-centered education bereft of higher-level thinking. Therefore, it is important that students understand they are not

always expected to answer the questions when they first appear, but rather to keep them in mind as guides when they are reading or discussing.

GIGI asks both convergent and divergent questions, trying to reach a balance between the two. Supplement the questions in GIGI by asking your students many more of the types of questions suggested by Slater (1993). These are questions that encourage

- recall,
- classification and ordering,
- the use of data to draw conclusions,
- awareness of the limitations of data or of evaluation of data, and
- awareness of the processes of reasoning used.

According to the National Geography Standards, the "geographically informed person applies a comprehensive spatial view of the world to life situations" (Geography Education Standards Project 1994). In order to foster such a view of the world, GIGI asks *geographic* questions that ask where things are and why. By asking such geographic questions and by having students learn to ask them, you will reinforce GIGI's approach. A good question to begin with is: Where is this issue located? Then proceed to questions such as the following:

- Why does it take place there?
- How and why does this issue affect the people in this place?
- In what other places do people confront this issue?
- How and why are these places related?
- What alternatives do people have to improve their situation, and which alternatives do you recommend?

Fundamental Themes of Geography

In recent years, many geography teachers have learned that the five "fundamental themes" (Joint Committee on Geographic Education 1984) help them ask geographic questions. The theme of **Location** asks where things are and why things are located where they are. **Place** is the theme that inquires into human and physical characteristics of locations. **Human-Environment Interaction** examines how and why humans both adapt to and modify their environments as well as the consequences of these actions. **Movement** investigates not only how and why places are connected but also what is the significance of those interactions. The theme of **Region** seeks to identify and explain similarities and differences among areas and how and why these form and change. An extended explanation of the themes and their concepts, interrelationships, and applications is

given in Hill and McCormick (1989). The themes are useful because they encourage the kinds of questions required to help students develop the geographic perspective.

Importance of Local Examples

GIGI is a world geography, but it shows that issues work at various geographic scales—personal, local, regional, national, and global. Because it is sometimes difficult for younger students to identify with faraway places, success with GIGI in part depends upon the ability of both you and your students to relate the issues to examples in your local community. We strongly recommend that you refer in class to local examples of the issue being investigated. Just as important, we encourage you to have your students conduct local field studies related to this issue whenever possible. Issues having important geographic dimensions abound in every community (see the Extension Activities and Resources section at the end of this Teacher's Guide for examples). Peak educational experiences often come when students see things in the field that relate to their classroom studies. We discuss other reasons for local involvement in the next section.

Familiar people can be as important as familiar places in motivating students. The quality of personal engagement is at the crux of successful instruction. Using the BGGS videodisc segments that accompany most GIGI lessons is a powerful way to help your students find relevance by identifying the GIGI issues with real people. Similarly, you can connect GIGI issues to everyday life at a human scale, especially at the students' own age levels, by using current newspaper accounts or magazines that address the student's perspective.

As you gain familiarity with teaching local examples, as you develop field exercises for your students, and as you learn how to put a human face on these materials, you will begin to customize the GIGI modules to fit your particular environment. Our trial teachers reported that the more they taught GIGI modules, the more comfortable they became in adapting them to fit their needs.

Fostering Optimistic and Constructive Perspectives

The seriousness and complexity of the global issues studied in GIGI can overwhelm students unless you take care to foster optimistic and constructive perspectives toward issues. "Gloom and doom" needs to be balanced with examples of success and prospects for positive change. It is important to help your students develop a

sense of personal efficacy, an attitude that their actions can make a difference in solving global problems. The maxim, "Think Globally, Act Locally," speaks to the need to help students organize and conduct constructive actions that address local variants of the issues they are studying. As we noted earlier, student involvement in local projects enriches their educational experience. There is also good evidence that it actually produces an optimistic feeling—that their actions *can* make a difference—to help them deal with the often difficult and sometimes depressing world issues. GIGI modules often include lessons and activities to show possibilities for positive action.

Certain perspectives foster student optimism and constructive behavior. Geography students, especially, should learn to respect other peoples and lands, and they should come to cherish environmental unity and natural diversity. They should also learn to be skeptical about simplistic explanations, such as the theory that attempts to explain human characteristics and actions in terms of the physical environment alone, which geographers call "environmental determinism." Most important, optimistic and constructive perspectives accompany the development of empathy, tolerance, and open-mindedness. These traits are fostered by avoiding sexist and racist language, discouraging ethnocentricity, and challenging stereotypes, simplistic solutions, and basic assumptions.

References to Data

Unlike most textbooks, GIGI attributes its sources of data with in-text citations and full reference lists, which is another way of encouraging the critical perspective. In the Student DataBook, material that has been extracted from original sources is indented and printed in a different typeface. Long extracts are highlighted with background color. Use of these sources helps your students learn that real people construct ideas and data and that their concepts and information are not immutable. Instead, they often change through the critiques and interpretations of various people. By using these scholarly conventions, we intend to encourage your students to appreciate the tentativeness of knowledge and to value scholarship and academic integrity.

Updating

Real data quickly become obsolete. GIGI addresses this fact by discussing historical trends of data and by stressing concepts. You should reinforce this bias for concepts and also freely acknowledge the datedness of information by explaining why it is still used (for example, the lags between research and writing and publication and

use; the lack of more recent data). Whenever possible, guide students to update materials. Britannica's Geopedia, on the BGGS CD-ROM, contains data based on Encyclopædia Britannica's World Data Annual, which is also available in print form. Have students use these sources to supplement and update GIGI data.

Assessing Learning

Evaluation of student achievements with GIGI can be focused on two broad areas. The first is the developing ability of students to undertake geographic inquiry. The second is the acquisition of knowledge and perspectives about the module issue.

The ability of students to undertake inquiry in geography can be related to the primary questions that guide geographical study. They are noted earlier in this memo. As students work through the module, they are likely to become increasingly adept at asking and answering geographic questions. Seek to extend your students' competence in several clusters of skills that facilitate geographic inquiry. These clusters include the following:

- Identifying problems and issues. This may be done through observation, asking questions, brainstorming, reading, and in other ways.
- Inquiring into the problems and issues in many ways such as through map reading and interpretation, making surveys, and using results of surveys done by others.
- Making decisions and taking action, for example, through reviewing alternatives, establishing priorities and criteria, and communicating cooperatively with people in other ways.
- Reflecting at all stages of the process of inquiry, especially through careful consideration of diverse sources of evidence.

Students will acquire knowledge of the module issue as they make their inquiries. This knowledge can be tested and graded. Assessments may be based on the following:

- Knowledge and skills shown by work on Activities included in this Teacher's Guide and on questions in the Student DataBook.
- Observations of student participation in groups and in class discussions.

Specific assessment ideas are given at the end of some lessons in the section called For Further Inquiry. In addition, the Teacher's Guide ends with Extension Activities and Resources. Some of these extension activities can serve as authentic assessments.

Potential Uses

In addition to the flexibility offered by the free-standing nature of the modules, GIGI has a number of other characteristics that encourage widespread use. Modules can be extended and enhanced with the BGGS CD-ROM, videodiscs, and posters. Because GIGI's issues-based approach integrates several topics (for example, population, economic, political, physical, and cultural geography) in a single module, the modules are not conducive to using an approach in which topics are taught separately. On the other hand, GIGI may be used with a world regional approach because there are modules for each of 10 world regions. A year-long world geography or global studies course will have more than enough material by using 12 modules. Five to seven modules may constitute a one-semester, issues-based geography course covering several regions. You can define clusters of modules for your own curricular purposes. We have identified three clusters for interdisciplinary studies within the Britannica Global Geography System, each comprising six or seven GIGI modules. They are *Earth's Environment and Society, Economic Development,* and *Global Political and Cultural Change.* BGGS includes a videodisc and poster for each cluster. These strand packages could well be used in Social and Environmental Studies, Earth Science, Global Studies, and Area Studies classes. Activities in the modules also support math, language arts, and arts curricula.

GIGI encourages and facilitates the development of a variety of geographic skills that transfer widely into the natural and social sciences. Among these are skills of asking geographic questions and developing and testing geographic generalizations. These require other GIGI skills including examining and making a variety of maps; analyzing photographs; constructing and interpreting graphs and tables of spatial data; and collecting, interpreting, and presenting geographic information.

Finally, GIGI promotes a wide variety of linguistic, numeric, oral, creative, and social skills as well as geographic skills. In particular, GIGI emphasizes cooperative learning. We believe that one of the great strengths of the GIGI modules is that they give students practice in both group and individual problem solving. As students become more familiar with the global issues, they learn that finding solutions to world problems requires people to work together cooperatively.

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Preparing to Teach This Module

Population Growth

How is population growth to be managed?

This module investigates the way in which countries manage population growth. This is a central issue for countries trying to improve the quality of life for their people, particularly for developing countries seeking economic and political stability. In these places, population is outgrowing the ability to provide jobs or the basic necessities of health care, food, clothing, and shelter. Because global population growth is likely to remain a critical problem in the foreseeable future, it is essential for today's students to understand the complexities of this issue. This module provides opportunities to explore several fundamental themes of geography, notably the themes of *Place, Region, Human-Environment Interaction,* and *Movement.*

The module begins with students using population data from selected countries and regions of the world to identify areas having population-growth problems. They examine population change both in terms of growth rate and absolute numerical growth. The second lesson introduces the Demographic Transition model used by geographers to explain the patterns of population growth. The structure of this module permits you to cover the global issue of population growth (its spatial pattern and explanatory factors) in about one week of class time, using just Lessons 1 and 2. The case studies of China, Kenya, and/or the United States give students a greater understanding of this issue.

The next three lessons are devoted to a case study of the People's Republic of China. In Lesson 3, students use text and tables to discover the problems China faces as a result of its enormous absolute growth. Students also see how China's physical geography helps explain the uneven spatial distribution of population in the country. These topics help students appreciate China's interest in managing its population growth.

Lesson 4 discusses traditional Chinese values as background to the One-Child Policy of 1979, China's primary attempt to control its growth. Having seen that China has succeeded in reducing its fertility rate, students are asked to speculate on how an effective population-growth policy would address cultural preferences for large families. Afterward, students are shown the One-Child Policy and asked to evaluate it. Lesson 5 presents a variety of data illustrating the problems of enforcing this policy. Students learn that differences between rural and urban populations, and between ethnic groups in China, underlie some of these problems. Traditional preferences for sons have also created troubling side effects of the One-Child Policy, as shown in data suggesting the severe mistreatment of baby girls. Important issues related to population growth, such as the need for gender equity in developing countries, can be explored in this lesson.

Following the China case study, students examine population growth in Kenya and the United States. Students explore how Kenya's government has chosen to manage its very high rate of natural increase and how the U.S. government has dealt with population growth resulting from immigration. Each of these types of growth offers different challenges to the question of population management by governments. Activities have students take on the role of government advisers.

Because a large part of this module looks at population management in the context of cultural values, there may be serious pitfalls for students who lack appreciation of the world's cultural diversity. It could be easy for students with a Western mindset to offer simplistic policies that disregard the cultural traditions that seem to impede progress toward managing population. Therefore, one goal of this module is to raise the cultural awareness of students.

Using the BGGS CD-ROM can simplify lesson planning by making it easy to access the resources the system provides for each lesson. It shows exactly which Geopedia™ data and learning activities can be used in long-range and short-term assignments, and which videodisc clips will provide visual reinforcement for each GIGI lesson. The CD-ROM can also show you ways in which a lesson in one module relates to a lesson in another module. And it indicates where to find every reference in GIGI, Geopedia™, the Mini-Atlas maps, and the videodiscs to any key topic—for example, "tsunami" or "Bangladesh." The students will also be able to use the BGGS CD-ROM for further research and short-term or long-term range assignments. The BGGS multimedia components and their uses are explained fully in the tabbed BGGS section in the front of this Teacher's Guide.

The following are general modifications recommended for younger students:

- Plan for fifteen days because the activities will require more teacher explanation and support.

- Provide directions for homework assignments and monitor students' understanding and progress.
- Prior to assigning written activities requiring students to draw conclusions and summarize their findings, ask guiding questions and develop a sample outline on the chalkboard.

Module Objectives

- Identify places where population growth has become a problem.
- Explain why population grows at different rates in different world regions.
- Describe the environmental and economic problems associated with rapid population growth in developing countries.
- Analyze and interpret population pyramids to identify different patterns of population growth.
- Discuss how cultural traditions affect rates and patterns of population growth.
- Describe and evaluate policies that governments have used to manage population growth.

Number of Days Required to Teach *Population Growth*

Twelve to fifteen 50-minute class periods

Suggestions for Teacher Reading

Buck, Pearl S. 1931. *The Good Earth*. New York: The John Day Company, Inc.

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Dudley, William, editor. 1990. *Immigration: Opposing Viewpoints*. San Diego, CA: Greenhaven Press.

Hardwick, Susan W., and Holtgrieve, Donald G. 1990. *Patterns on Our Planet: Concepts and Themes in Geography*. New York: Merrill.

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Jowett, A. John. 1990. China: the great leap to disaster. *Focus,* 40 (3): 19–23.

Mann, C. C. 1993. How many is too many? *The Atlantic Monthly,* February: 47–67.

Marshall, Bruce, editor. 1991. *The Real World: Understanding the Modern World Through the New Geography.* Boston: Houghton Mifflin.

Yuan Tien, H. 1990. China's population planning after Tiananmen. *Population Today,* September: 6–8.

Lesson 1

Where is population growth a problem?

Time Required

Two or three 50-minute class periods

Materials Needed

Several hand calculators
Copy of Activity 1 for each pair of students
Mini-Atlas map 1
Colored pencils
Copy of Activity 2 for each group of students

Glossary Words

absolute growth

doubling time

gross national product (GNP)

migration

natural increase

Getting Started

- Have students read the Memo to the Student and the module overview on pages 2–3 of the Student DataBook. Also make sure students are aware that there is a Glossary in the back of their DataBooks.
- Begin by reading the following scenario concerning world population growth, adapted from remarks made by the geographer Philip Bacon:

> Every time your heart beats, the world's population increases by three. Taking into account the surplus of births over deaths, the world's net population increase is three more babies every time your heart beats.

Have the class use this idea to calculate how much world population increases each minute, hour, and day. [To calculate the increases, assume that the human heart beats about 60 times per minute. World population increases by about 180 each minute, or about 10,800 each hour. This equals over 259,000 babies per day.] If you wish, mention the following points to emphasize that world population is increasing rapidly. (All of the figures in this example assume that the rate of population increase stays the same.)

> Every day, over 250,000 more babies are born than people die. This figure is about the same as that of the population of St. Paul, Minnesota, or Tampa, Florida. In four days, the number of people would grow to equal the population of Detroit or Dallas. In one year, the population would increase to over 90 million. There are only 11 countries in the world with this many people. The population added to the world in two years would surpass all but four countries in the world.

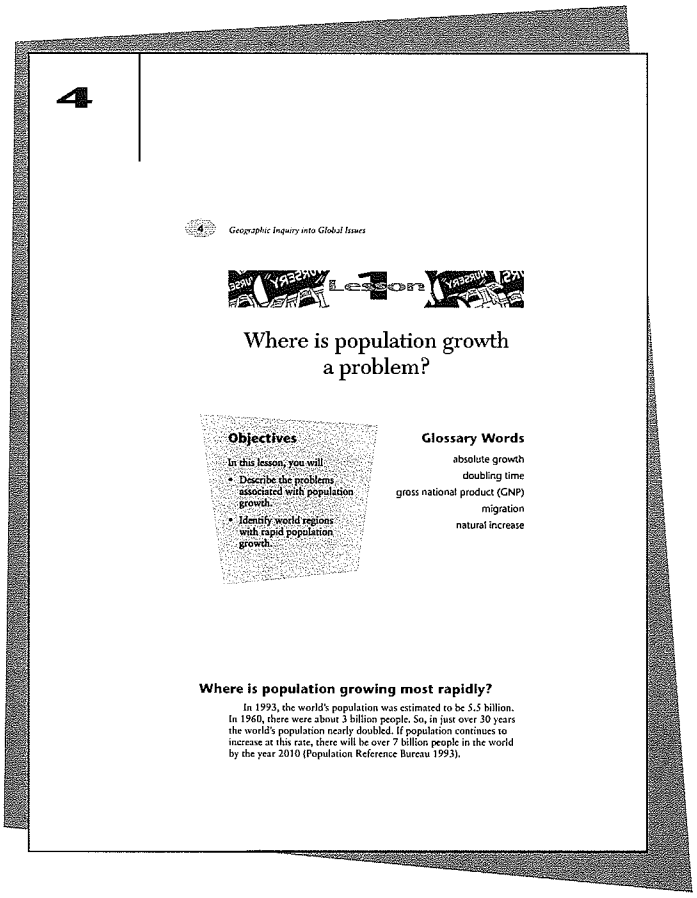
Procedures

Where is population growing most rapidly? (pages 4–10)

A. Before students open their DataBooks to Lesson 1, ask them to choose partners. Distribute colored pencils and a copy of **Activity 1** to each pair, and either make **Mini-Atlas map 1** (world political map) available or have students use world maps or globes to find locations of countries as needed. Have students complete the following tasks:

   a. Guess the six most populated countries in the world. Have students shade in these countries and record the estimated population rank of each.

   b. Guess the six countries with the fastest population growth. Have students rank these countries and shade them on the map. If they identify the same countries as the most populated and fastest growing, have them use both colors to shade those countries.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4 Geographic Inquiry into Global Issues

Lesson 1

Where is population growth a problem?

Objectives

In this lesson, you will

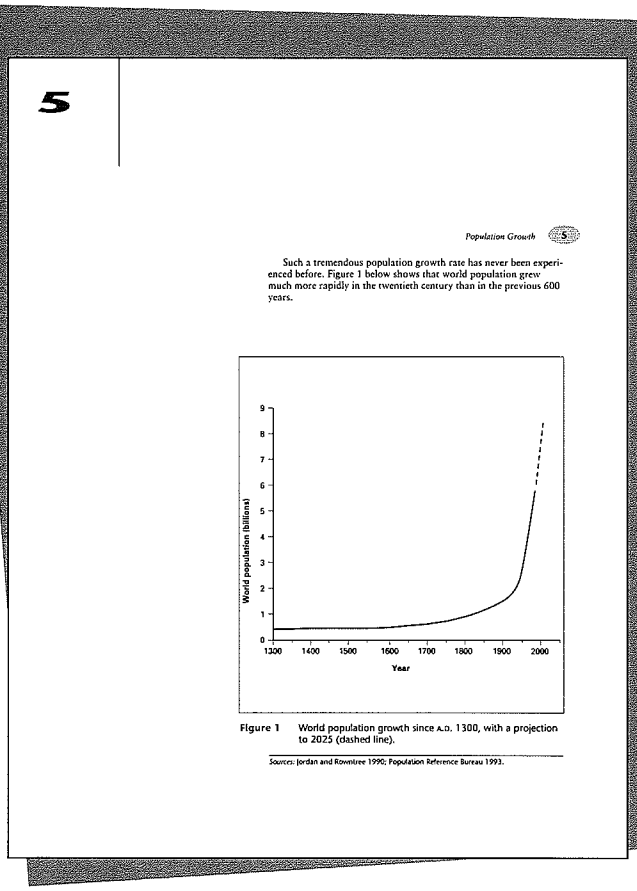
- Describe the problems associated with population growth.
- Identify world regions with rapid population growth.

Glossary Words

absolute growth
doubling time
gross national product (GNP)
migration
natural increase

Where is population growing most rapidly?

In 1993, the world's population was estimated to be 5.5 billion. In 1960, there were about 3 billion people. So, in just over 30 years the world's population nearly doubled. If population continues to increase at this rate, there will be over 7 billion people in the world by the year 2010 (Population Reference Bureau 1993).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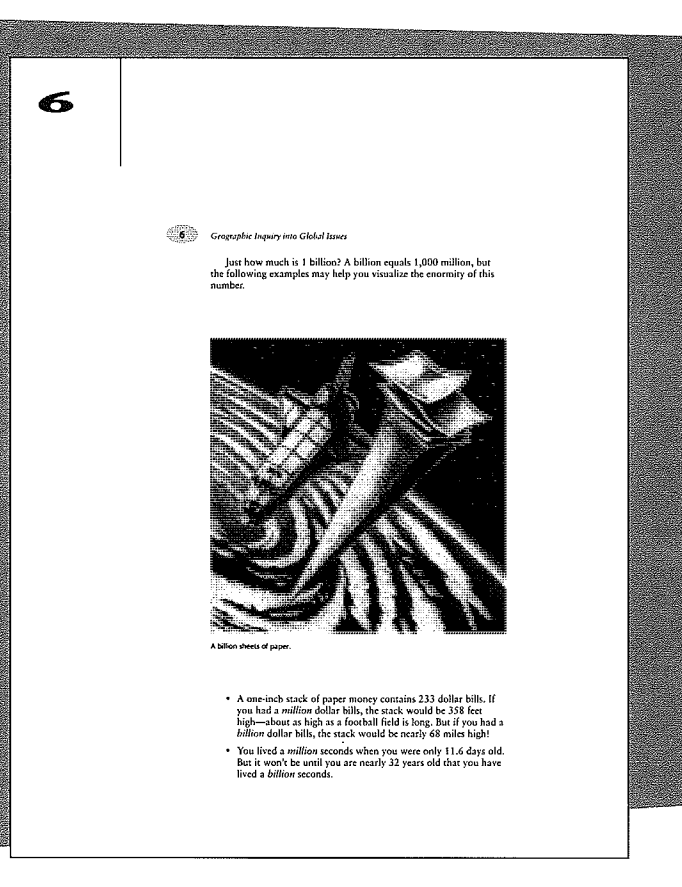
Population Growth 5

Such a tremendous population growth rate has never been experienced before. Figure 1 below shows that world population grew much more rapidly in the twentieth century than in the previous 600 years.

Figure 1 World population growth since A.D. 1300, with a projection to 2025 (dashed line).

Sources: Jordan and Rowntree 1990; Population Reference Bureau 1993.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6 Geographic Inquiry into Global Issues

Just how much is 1 billion? A billion equals 1,000 million, but the following examples may help you visualize the enormity of this number.

A billion sheets of paper.

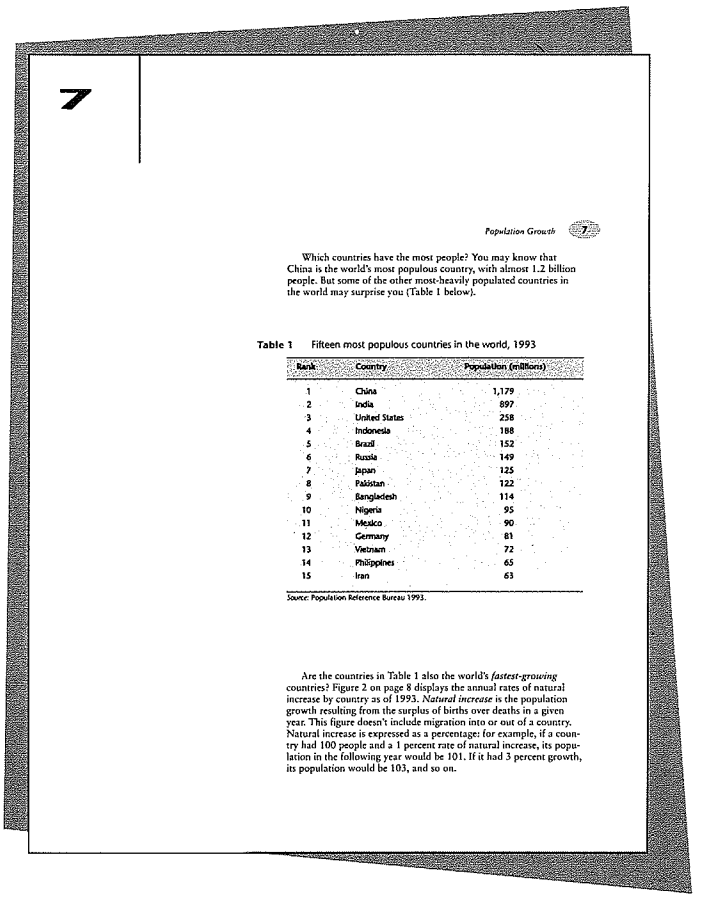
- A one-inch stack of paper money contains 233 dollar bills. If you had a *million* dollar bills, the stack would be 358 feet high—about as high as a football field is long. But if you had a *billion* dollar bills, the stack would be nearly 68 miles high!
- You lived a *million* seconds when you were only 11.6 days old. But it won't be until you are nearly 32 years old that you have lived a *billion* seconds.

B. After they have completed the Activity 1 map, ask the pairs to form groups of four. Have the two pairs in each group compare their answers with each other, using the second page of Activity 1. Have the groups write the names of the countries on which the pairs agreed in the center of the Venn diagrams, and the names of the countries on which the pairs disagreed on each side.

Have the groups write their predictions on the chalkboard. Then ask the class the following questions: "On what information did you base your predictions?" "How accurate do you think your predictions are?"

C. Have students open their DataBooks and read the introductory text about world population growth. Be sure students recognize that the population-growth rates of the last century are the fastest in history (Figure 1 on page 5). Have student groups check the accuracy of their predictions against Table 1 and Figure 2 on pages 7 and 8 and answer Questions 1–3 on page 9.

Younger students may need additional clarification on the concept of large numbers, such as a billion.



7

Population Growth 7

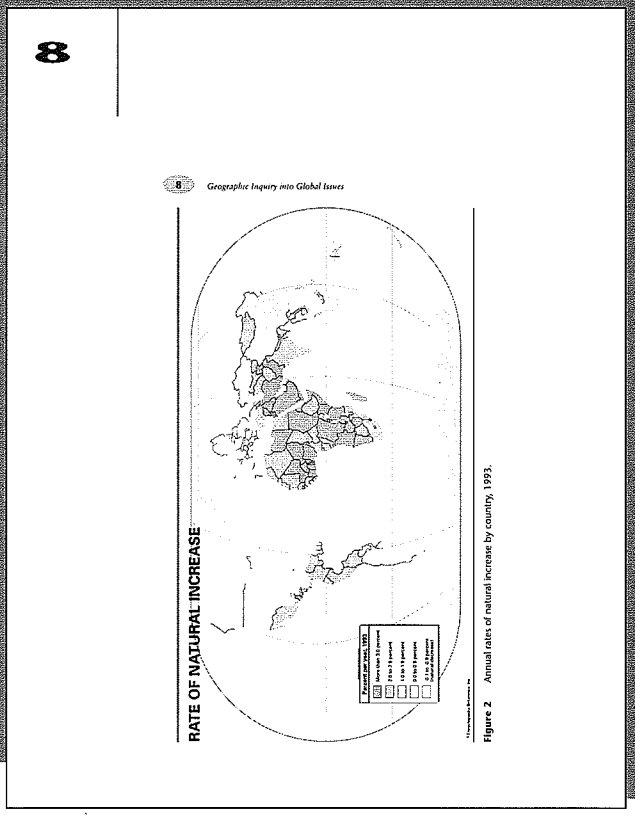
Which countries have the most people? You may know that China is the world's most populous country, with almost 1.2 billion people. But some of the other most-heavily populated countries in the world may surprise you (Table 1 below).

Table 1 Fifteen most populous countries in the world, 1993

Rank	Country	Population (millions)
1	China	1,179
2	India	897
3	United States	258
4	Indonesia	188
5	Brazil	152
6	Russia	149
7	Japan	125
8	Pakistan	122
9	Bangladesh	114
10	Nigeria	95
11	Mexico	90
12	Germany	81
13	Vietnam	72
14	Philippines	65
15	Iran	63

Source: Population Reference Bureau 1993.

Are the countries in Table 1 also the world's *fastest-growing* countries? Figure 2 on page 8 displays the annual rates of natural increase by country as of 1993. *Natural increase* is the population growth resulting from the surplus of births over deaths in a given year. This figure doesn't include migration into or out of a country. Natural increase is expressed as a percentage: for example, if a country had 100 people and a 1 percent rate of natural increase, its population in the following year would be 101. If it had 3 percent growth, its population would be 103, and so on.



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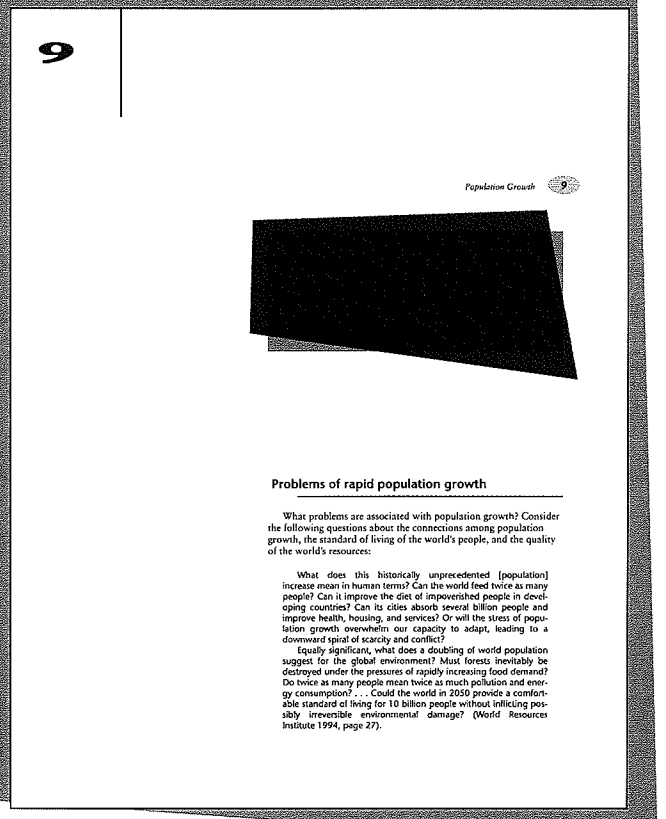
8 *Geographic Inquiry into Global Issues*

RATE OF NATURAL INCREASE

Figure 2 Annual rates of natural increase by country, 1993.



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Population Growth 9

Problems of rapid population growth

What problems are associated with population growth? Consider the following questions about the connections among population growth, the standard of living of the world's people, and the quality of the world's resources:

> What does this historically unprecedented [population] increase mean in human terms? Can the world feed twice as many people? Can it improve the diet of impoverished people in developing countries? Can its cities absorb several billion people and improve health, housing, and services? Or will the stress of population growth overwhelm our capacity to adapt, leading to a downward spiral of scarcity and conflict?
>
> Equally significant, what does a doubling of world population suggest for the global environment? Must forests inevitably be destroyed under the pressures of rapidly increasing food demand? Do twice as many people mean twice as much pollution and energy consumption? . . . Could the world in 2050 provide a comfortable standard of living for 10 billion people without inflicting possibly irreversible environmental damage? (World Resources Institute 1994, page 27).

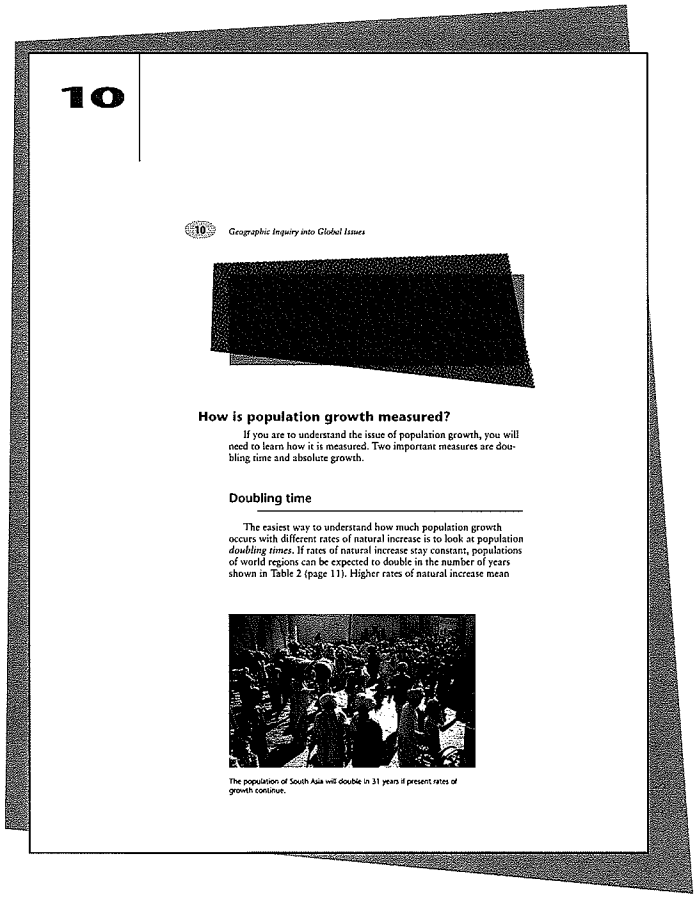
Questions and Answers for page 9

1. Based on the rates shown in Figure 2, which countries listed in Table 1 are growing the fastest?
   - Of the 15 most populous countries, only Pakistan, Nigeria, and Iran are in the highest growth-rate category. The point here is that not all heavily populated countries also have high growth rates.

2. In general, which areas of the world have the highest rates of natural increase? Which have the lowest rates of natural increase?
   - The highest growth rates are in Africa, western and southern Asia, and parts of Latin America. The lowest growth rates are in Europe, North America, Australia, Japan, and most of the former Soviet Union.

3. What do you think the regions with higher rates of population growth have in common?
   - Encourage speculation here if students do not know that these regions also have relatively low levels of economic development. This point will be brought out in more detail in Lesson 2.

D. Have several students read aloud the extract in the section titled, "Problems of rapid population growth" (page 9). Discuss Questions 4–5 on page 10.



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10 *Geographic Inquiry into Global Issues*

How is population growth measured?

If you are to understand the issue of population growth, you will need to learn how it is measured. Two important measures are doubling time and absolute growth.

Doubling time

The easiest way to understand how much population growth occurs with different rates of natural increase is to look at population *doubling times*. If rates of natural increase stay constant, populations of world regions can be expected to double in the number of years shown in Table 2 (page 11). Higher rates of natural increase mean

The population of South Asia will double in 31 years if present rates of growth continue.

Questions and Answers for page 10

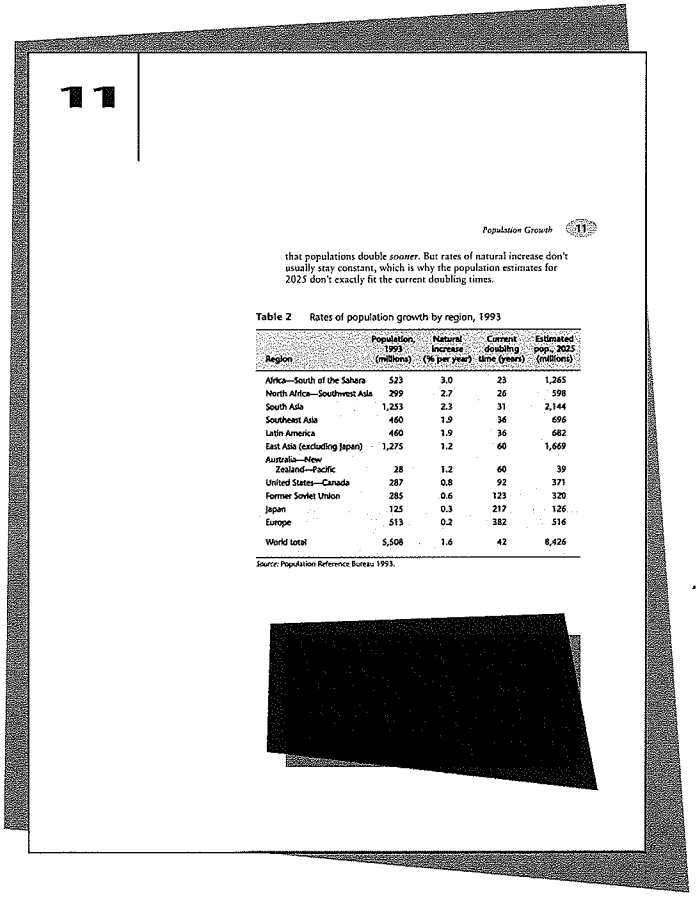
4. What problems does the quote mention as being part of the population-growth issue?
   - Students can find the following problems listed: hunger; urban growth; inadequate housing, health care, and services; resource scarcity; conflict; deforestation; increasing pollution; and depleted energy resources. Challenge students to identify other problems linked to population growth.

5. What do you think about the problems of population growth? What do you think could be done about these problems?
   - Encourage students to speculate here to see what preconceptions they have about population growth and population management.

How is population growth measured? (pages 10–13)

E. This section contrasts two ways of looking at population growth. Have students read the sections "Doubling time" and "Absolute growth" (pages 10–13). Table 2 on page 11 displays the relationship between natural increase and doubling time by world region; Table 3 on page 12 illustrates that countries with high absolute growth do not necessarily have high rates of population growth. The point of this section is that it is necessary to consider both doubling time and absolute growth when measuring population-growth problems.

   If the concepts in this section are too advanced for younger students, this material may be skipped. Procedure F, which follows, provides a simpler way to present these ideas.


11

Population Growth 11

that populations double *sooner*. But rates of natural increase don't usually stay constant, which is why the population estimates for 2025 don't exactly fit the current doubling times.

Table 2 Rates of population growth by region, 1993

Region	Population, 1993 (millions)	Natural increase (% per year)	Current doubling time (years)	Estimated pop., 2025 (millions)
Africa—South of the Sahara	523	3.0	23	1,265
North Africa—Southwest Asia	299	2.7	26	598
South Asia	1,253	2.3	31	2,144
Southeast Asia	460	1.9	36	696
Latin America	460	1.9	36	682
East Asia (excluding Japan)	1,275	1.2	60	1,669
Australia—New Zealand—Pacific	28	1.2	60	39
United States—Canada	287	0.8	92	371
Former Soviet Union	285	0.6	123	320
Japan	125	0.3	217	126
Europe	513	0.2	382	516
World total	5,508	1.6	42	8,426

Source: Population Reference Bureau 1993.

Questions and Answers for page 11

6. What kinds of problems do you think may occur in places with short population doubling times?

   - Have the class brainstorm the possible consequences of a short doubling time: resource depletion, overcrowding, deterioration of social conditions, inadequate social and health care services, and so on. Note that short doubling times present these kinds of problems for countries of any size, especially poor countries.

7. Why do you think the population-growth rate in the United States and Canada is among the slowest in the world?

   - This is another question that calls for speculation for which more information is given in Lesson 2. Students may be aware that preferred family sizes in North America are smaller than in countries in Africa or Asia. Accept any reasonable speculation at this point in the module.

8. Based on Table 2, which regions do you think are likely to have the biggest problem with population growth in the next 30 years?

   - Students may note that by the year 2025, the population of Africa—South of the Sahara is expected to increase by over 700 million, which would place great stress on this already financially troubled region. Tremendous population growth is also expected in South Asia (adding almost 900 million people) and East Asia (adding almost 400 million people). Be sure students note that minimal population growth, by comparison, is expected in Europe, Japan, Australia, and North America.

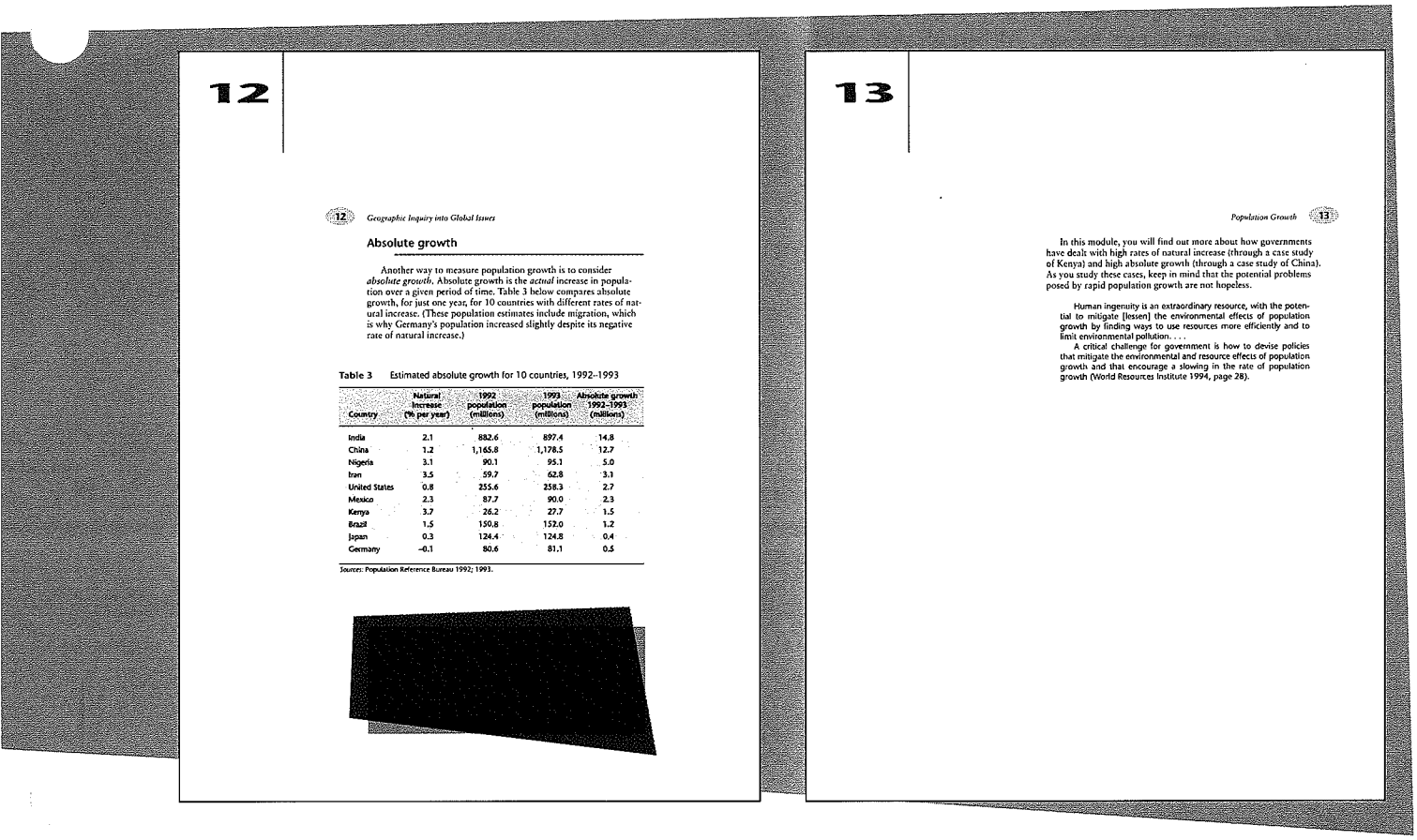
F. Divide the class again into groups of four students each. Provide a copy of Activity 2 to each group. This Activity is designed to get students thinking about the consequences of short doubling times and high absolute growth. Discuss the hypothetical questions on the Activity as well as Questions 6–10 on pages 11 and 12. See *Key for Activity 2*.

G. Close by having students read the final quote on page 13. The quote is meant to foster some optimism that population-growth problems are manageable.

Questions and Answers for page 12

9. In Table 3, did the countries with the highest absolute growth also have high rates of natural increase? Explain your answer.
   - India and China have the highest absolute growth but have moderate rates of natural increase. Students may realize that this is possible because the base populations of these countries are so vast that even a moderate rate of growth results in large absolute growth.

10. Which countries do you think have the greatest population-growth problem, those with high rates of natural increase or those with large absolute growth? Explain your answer.
    - Here it is hoped that students recognize that both situations create problems, especially for poorer countries. Be sure students see that a problem occurs when a country cannot provide necessary services (food, clothing, shelter, or other resources) to all its people. Either measure can be an indicator of potential problems. Rapid growth in small countries (such as Kenya) can stress a country's ability to provide for its people. But where a country has a very large population (e.g., China), even a modest growth rate can cause massive absolute population increases.



12

12 *Geographic Inquiry into Global Issues*

Absolute growth

Another way to measure population growth is to consider *absolute growth*. Absolute growth is the *actual* increase in population over a given period of time. Table 3 below compares absolute growth, for just one year, for 10 countries with different rates of natural increase. (These population estimates include migration, which is why Germany's population increased slightly despite its negative rate of natural increase.)

Table 3 Estimated absolute growth for 10 countries, 1992–1993

Country	Natural increase (% per year)	1992 population (millions)	1993 population (millions)	Absolute growth 1992–1993 (millions)
India	2.1	882.6	897.4	14.8
China	1.2	1,165.8	1,178.5	12.7
Nigeria	3.1	90.1	95.1	5.0
Iran	3.5	59.7	62.8	3.1
United States	0.8	255.6	258.3	2.7
Mexico	2.3	87.7	90.0	2.3
Kenya	3.7	26.2	27.7	1.5
Brazil	1.5	150.8	152.0	1.2
Japan	0.3	124.4	124.8	0.4
Germany	-0.1	80.6	81.1	0.5

Source: Population Reference Bureau 1992; 1993.

13

Population Growth 13

In this module, you will find out more about how governments have dealt with high rates of natural increase (through a case study of Kenya) and high absolute growth (through a case study of China). As you study these cases, keep in mind that the potential problems posed by rapid population growth are not hopeless.

> Human ingenuity is an extraordinary resource, with the potential to mitigate [lessen] the environmental effects of population growth by finding ways to use resources more efficiently and to limit environmental pollution. . . .
>
> A critical challenge for government is how to devise policies that mitigate the environmental and resource effects of population growth and that encourage a slowing in the rate of population growth (World Resources Institute 1994, page 28).

For Further Inquiry

Have students list the types of data they would need to investigate population-growth patterns in any country (e.g., birth rates, death rates, doubling time, percentage annual natural increase). Have students go to the library to find such data for a specific country of their choice.

Suggested Local Activity

The following activity provides a way to link the global issue of population management to your local community. Students can do this activity outside of class while they are working through the module's other lessons. Alternatively, you may prefer to do this activity as an extension after Lesson 7 has been completed.

In the activity, students inquire into how their own community has managed population growth. First, the class needs to define the extent of their "community." Does it include only an area within city limits or an entire metropolitan area or rural county? The second step is to see what kind of population-growth management, if any, exists. Although this module focuses on strategies for limiting population growth, many places seek to increase their population by providing incentives to businesses. You may need to make sure students understand that population growth includes people moving into an area as well as an increase in birth-over-death rates. Third, students will assess current policies and evaluate alternatives. Finally, students will develop an action plan to promote the changes they feel should be made (if any).

> Younger students will need greater direction on this project, and you may need to acquire some data for them in advance, especially if you wish to limit the duration of the activity. However, allowing older students the time to locate the data will give them practice in research skills. In either case, prior to beginning the activity, you will need to ensure that the necessary data are available.

Materials Needed

Population data for your community from the two most recent censuses

Copies of local newspaper articles addressing population-management policies

Reports from local government about managing population growth

Reports from civic and business groups (e.g., the League of Women Voters and the Chamber of Commerce) about population growth

Getting Started

Discuss why and how local communities address the issue of population growth. Ask students if, and how, their own community manages growth. [Common measures for managing growth are local zoning laws and incentives for attracting new housing and business or keeping industry in the community.] Have the class consider whether their community is, in general, seeking to slow its rate of growth, maintain its current rate, or accelerate its rate of growth. Have students brainstorm the reasons behind the community's general policy.

Procedures

A. First students need to define the community's current population-growth policy. The following questions will help students focus on the nature of the management policy:

- What is the policy's purpose?
- How is it enforced?
- Is the policy consistent with the community's values and goals?

Have students seek answers to these questions by searching through past issues of local newspapers and by looking at reports prepared by local government and civic and business groups.

B. The next step is to see whether and how the policy has actually influenced population growth in the community. Have students use U.S. census data or other population-growth

information available from the city or county to make bar graphs, maps, or other visuals of population changes over the past two censuses. Projections of future trends are also important. Mapping data such as the number of housing starts or new businesses could be useful to show the spatial trends of population change in your area.

C. Once students have identified the community policy and its effects, they can evaluate it. Questions such as the following may help guide this task: Has the population grown (or not grown) as planned? Has there been a spatial pattern to growth, and was this intended? Has the policy served its purpose, or are there goals left to be fulfilled? Have city services (e.g., schools, fire and police protection, hospitals, roads, etc.) kept pace with the changes in population? Have there been any unintended effects of the policy? (For example, a steep rise in property values and housing shortages often accompany slow-growth policies.) Is it a good idea to continue this policy, or have new situations created new needs?

Students can supplement their own answers to these questions by interviewing concerned citizens' groups, business interests, and government officials. Encourage students to develop alternatives to the current policy if they believe alternatives are needed.

D. Once the class has developed its proposal, have students create an action plan to promote their policy ideas. The class as a whole could develop the plan, or you could evaluate individual students or small groups on their understanding of the issues by requiring them to produce one part of the action plan. Elements of an action plan that could promote the class policy would include having students:

- write letters to local newspapers and public officials;
- draw posters showing the need for the students' policy;
- create political cartoons or skits that make specific points;
- give speeches to civic groups; and
- design and produce brochures or newsletters for public distribution.

Lesson 2

Why does population grow rapidly in some parts of the world?

Time Required

One 50-minute class period

Materials Needed

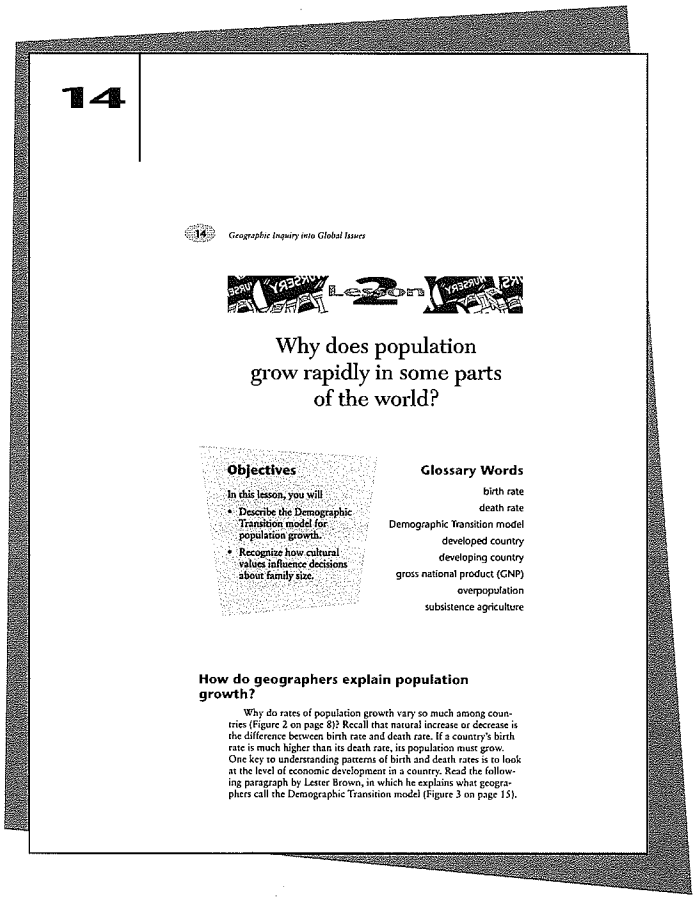
Transparencies of Overheads 1 and 2
Mini-Atlas map 2

Glossary Words

birth rate
death rate
Demographic Transition model
developed country
developing country
gross national product (GNP)
overpopulation
subsistence agriculture

Getting Started

Review Figure 2 on page 8 with the class. Ask students to locate the fastest-growing regions. [Students can note the location of Africa, Asia, and Latin America.] To get students thinking beyond mere location, use the first three columns of **Overhead 1** (rate of natural increase and birth and death rates for selected countries; mask out the fourth column). [Students should note that fast-growing countries have much greater birth rates than death rates.] Ask students to consider why birth rates might be so much higher in some countries; accept all speculations. Reveal the fourth column (GNP data) at this point. [Students may recognize that countries with higher GNP per person have lower rates of population growth.]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14 Geographic Inquiry into Global Issues

Lesson 2

Why does population grow rapidly in some parts of the world?

Objectives

In this lesson, you will
- Describe the Demographic Transition model for population growth.
- Recognize how cultural values influence decisions about family size.

Glossary Words

birth rate
death rate
Demographic Transition model
developed country
developing country
gross national product (GNP)
overpopulation
subsistence agriculture

How do geographers explain population growth?

Why do rates of population growth vary so much among countries (Figure 2 on page 8)? Recall that natural increase or decrease is the difference between birth rate and death rate. If a country's birth rate is much higher than its death rate, its population must grow. One key to understanding patterns of birth and death rates is to look at the level of economic development in a country. Read the following paragraph by Lester Brown, in which he explains what geographers call the Demographic Transition model (Figure 3 on page 15).

Procedures

How do geographers explain population growth? (pages 14–16)

A. Have students read the paragraph describing the Demographic Transition model and study Figure 3 on page 15. Clarify this important concept as needed; use **Overhead 2** to guide the class through the relationship between rates of population growth and the stages of the Demographic Transition model. [It is important that students understand that rapid population growth occurs in Stage 2 and tapers off slightly in Stage 3. Little or no population growth occurs in Stages 1 and 4.]

Older students may be able to specify the relationship between the stages and rates of population growth individually. You may wish to photocopy Overhead 2, masking out the graph on the bottom, and have students complete it as a worksheet.

B. Divide the class into cooperative learning groups of about four students each. Be sure students understand the terms *developing* and *developed country* and can identify more-rapid population growth as a characteristic of developing countries. Have groups answer Questions 1–4 on page 16.

While students work on the questions, display Overhead 1 again so that students can use these data to help with Question 3. Provide a copy of **Mini-Atlas map 2** to each group (GNP per person by country) so that students can see the correlation between rates of population growth (Figure 2 on page 8) and economic development.

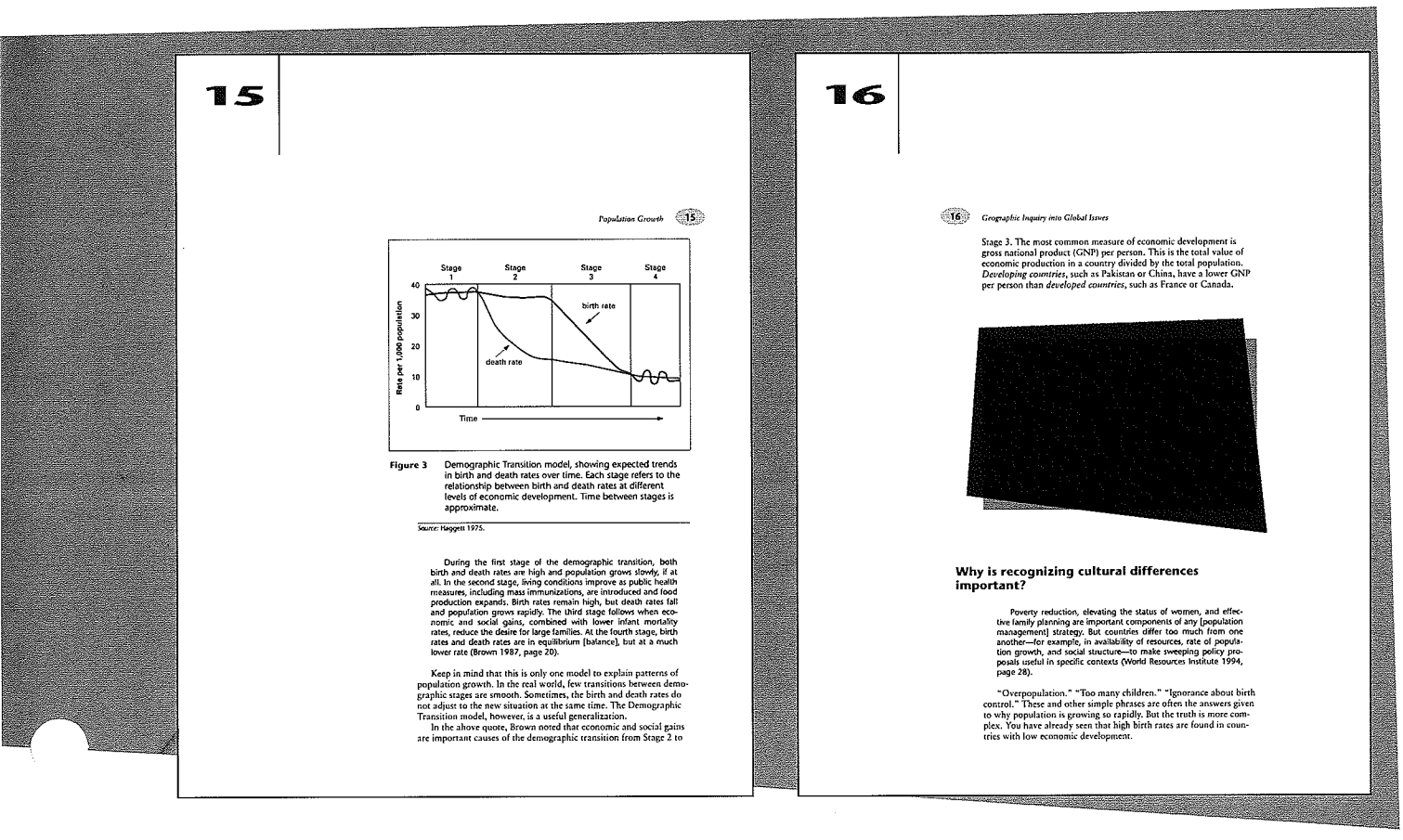

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Figure 3 Demographic Transition model, showing expected trends in birth and death rates over time. Each stage refers to the relationship between birth and death rates at different levels of economic development. Time between stages is approximate.

Source: Haggett 1975.

During the first stage of the demographic transition, both birth and death rates are high and population grows slowly, if at all. In the second stage, living conditions improve as public health measures, including mass immunizations, are introduced and food production expands. Birth rates remain high, but death rates fall and population grows rapidly. The third stage follows when economic and social gains, combined with lower infant mortality rates, reduce the desire for large families. At the fourth stage, birth rates and death rates are in equilibrium [balance], but at a much lower rate (Brown 1987, page 20).

Keep in mind that this is only one model to explain patterns of population growth. In the real world, few transitions between demographic stages are smooth. Sometimes, the birth and death rates do not adjust to the new situation at the same time. The Demographic Transition model, however, is a useful generalization.

In the above quote, Brown noted that economic and social gains are important causes of the demographic transition from Stage 2 to

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Stage 3. The most common measure of economic development is gross national product (GNP) per person. This is the total value of economic production in a country divided by the total population. *Developing countries*, such as Pakistan or China, have a lower GNP per person than *developed countries*, such as France or Canada.

Why is recognizing cultural differences important?

Poverty reduction, elevating the status of women, and effective family planning are important components of any [population management] strategy. But countries differ too much from one another—for example, in availability of resources, rate of population growth, and social structure—to make sweeping policy proposals useful in specific contexts (World Resources Institute 1994, page 28).

"Overpopulation." "Too many children." "Ignorance about birth control." These and other simple phrases are often the answers given to why population is growing so rapidly. But the truth is more complex. You have already seen that high birth rates are found in countries with low economic development.

Questions and Answers for page 16

1. In which stages of the Demographic Transition model does population grow? In which stages is there little or no population growth?

   - As covered in Procedure A, little growth occurs in Stages 1 and 4, when birth and death rates are in approximate equilibrium. Rapid growth occurs in Stage 2 and growth occurs at a less-rapid pace in Stage 3 as birth rates begin to drop.

2. In Stage 2, why do birth rates stay high while death rates drop? What finally brings birth rates down in Stage 3?

   - As discussed in the quote from Lester Brown, death rates drop in Stage 2 as health care measures improve and food production expands. Birth rates stay high until people shift their preference from traditional, large families to smaller families. This shift tends to occur, according to the model, when living standards improve enough so that the need for having many children is moderated. Birth rates stay high because these are functions of cultural values, which change more slowly. This point is covered briefly in the second part of this lesson.

3. Given the Demographic Transition model, what birth and death rates would you expect the countries in Table 3 (page 12) to have? What stage is each country in?

   - Students apply their understanding of the Demographic Transition model to guess the birth and death rates for the 10 countries in Table 3. They can use the rates shown in Overhead 1 for clues. The following are the 1993 birth and death rates for these 10 countries. It is not important that students guess these rates exactly, but they should estimate accurately which stage of the Demographic Transition model each country is in. The first number indicates the birth rate, the second number the death rate, and the third number the stage.

India (31-10-2 or 3)	Mexico (29-6-2 or 3)
China (18-7-3)	Kenya (45-9-2)
Nigeria (52-20-2)	Brazil (23-7-3)
Iran (45-10-2)	Japan (10-7-3 or 4)
United States (16-9-3)	Germany (10-11-4)

4. In general, how is a country's level of economic development (represented by GNP per person) related to its rate of population growth?

   - Comparison of Figure 2 on page 8 to Mini-Atlas map 2 reveals a general global pattern. Countries with low economic development (developing countries) have higher rates of population growth. They are generally in Stage 2 or early in Stage 3. More developed countries typically have lower rates of population growth; they are usually in late Stage 3, approaching Stage 4. This pattern bears out the idea of the Demographic Transition model—economic development is necessary for managing population growth.

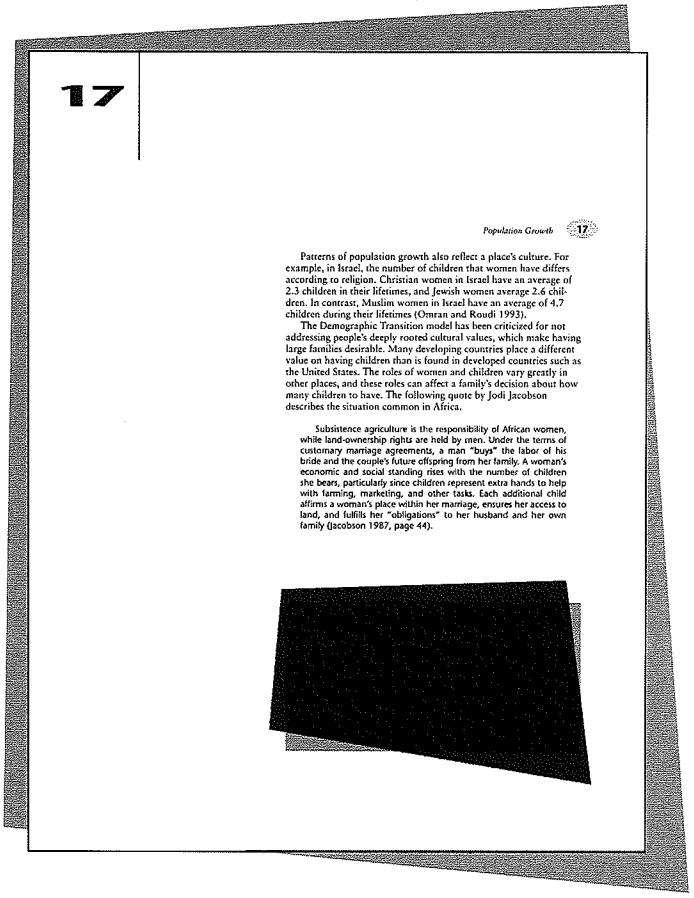
continued

Note: Although this pattern generally holds for most of the world, some countries experience low population growth, and even decline, in the absence of economic development. Examples include countries at war or in famine (e.g., Cambodia in the 1970s, Somalia in the 1990s) or countries where economic hardships are so great that the desire for having children decreases sharply. For example, Russia has experienced an enormous drop in birth rates and rise in death rates associated with its economic travails in the 1990s.

Why is recognizing cultural differences important? (pages 16–17)

C. Have students read the text, including Jacobson's description of the role of women in rural Africa. Survey the class to find out how many children are in each family (this should be done discreetly, with students writing a number anonymously on a slip of paper). Compare the average family size of your class to the U.S. average (about 2.0 children per family) and to places where the number of children is much larger (e.g., Kenya, where women have an average of 6.5 children, or Pakistan, where women have an average of 6.7 children). It is hoped students recognize that having many children remains an important goal in many cultures today, although the average number of children per family has decreased in North America.

Discuss Questions 5–8 with the class to reinforce the importance of recognizing differing cultural values in understanding the population-growth issue.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Patterns of population growth also reflect a place's culture. For example, in Israel, the number of children that women have differs according to religion. Christian women in Israel have an average of 2.3 children in their lifetimes, and Jewish women average 2.6 children. In contrast, Muslim women in Israel have an average of 4.7 children during their lifetimes (Omran and Roudi 1993).

The Demographic Transition model has been criticized for not addressing people's deeply rooted cultural values, which make having large families desirable. Many developing countries place a different value on having children than is found in developed countries such as the United States. The roles of women and children vary greatly in other places, and these roles can affect a family's decision about how many children to have. The following quote by Jodi Jacobson describes the situation common in Africa.

> Subsistence agriculture is the responsibility of African women, while land-ownership rights are held by men. Under the terms of customary marriage agreements, a man "buys" the labor of his bride and the couple's future offspring from her family. A woman's economic and social standing rises with the number of children she bears, particularly since children represent extra hands to help with farming, marketing, and other tasks. Each additional child affirms a woman's place within her marriage, ensures her access to land, and fulfills her "obligations" to her husband and her own family (Jacobson 1987, page 44).

Questions and Answers for page 17

5. Why are children valued so highly in agricultural societies, such as those found in Africa?
   - The traditional cultural value for large families is rooted in the economic value of children in subsistence agricultural societies. Children are an important labor source for farming and marketing tasks.

6. According to Jacobson, what are three reasons for high birth rates in Africa?
   - A woman's economic and social status depends on the number of children she has; children guarantee a woman's access to land; and having children fulfills a woman's obligation to her marriage in patriarchal African cultures.

7. How do the roles of women in developed, industrialized societies (such as the United States) differ from those in societies described by Jacobson?
   - This question is open to discussion. Possible ideas include that women in industrialized countries have their own economic and social status aside from their roles as mothers. Also, children are not needed as laborers in an urban society.

8. How might improving the status of women help reduce birth rates in developing countries?
   - If women had higher status they would not need to depend as much on child bearing to give them status. The point here is that improving the status of women is as important as poverty reduction (economic development) for lowering birth rates. But it is important for students to recognize that changes in cultural values of this sort can be very difficult and slow to achieve. This is a key point for understanding what has happened in China as it has tried to manage its population growth.

For Further Inquiry

- Ask students to imagine what the effects will be on their own way of life if world population reaches very high levels (e.g., projections for the twenty-first century range from 8 to 11 billion). Students could express their feelings about this in poems, cartoons, or short stories. Alternatively, have students imagine what life would be like if the world were to successfully manage future population growth. How would things be different?
- If you have the data available, you can have students classify countries by demographic stage using birth and death rate data. Students may understand the Demographic Transition model more clearly if they were to graph the results using data from selected countries they identified in each of the three stages. Possible sources include Population Reference Bureau's World Data Sheet or Geopedia from Encyclopædia Britannica Educational Corporation.

Lesson 3

Why is population growth a problem in China?

Time Required

Two 50-minute class periods

Materials Needed

Copy of Activity 3 for each pair of students
Mini-Atlas maps 3 and 4
Transparency of Overhead 3

Glossary Words

arable land

desertification

overpopulation

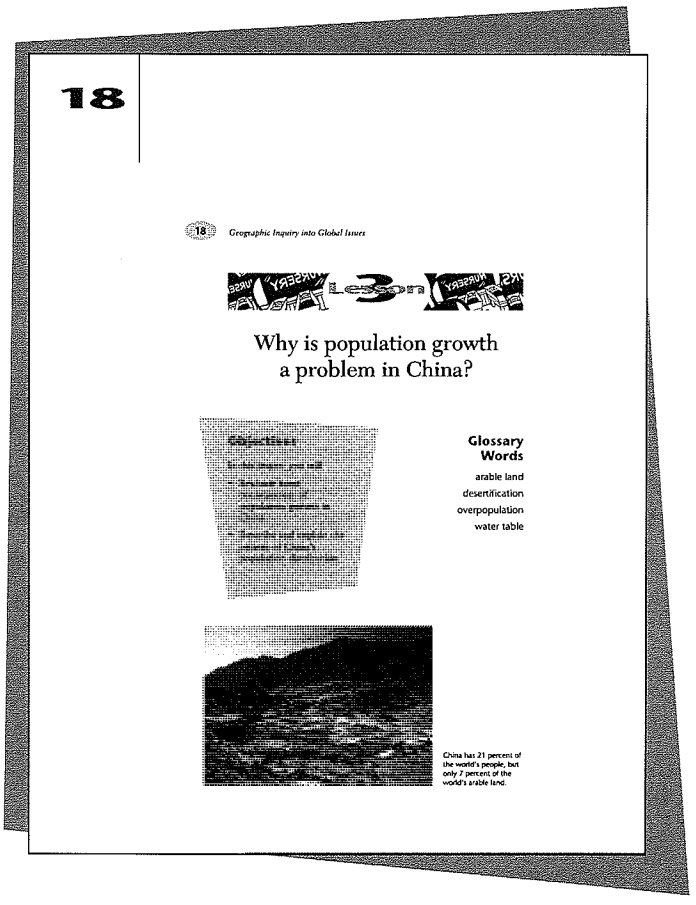
water table

Getting Started

- To introduce the China case study, review concepts from Lessons 1 and 2 using Figure 4 on page 19. Have students note China's population in 1949 (when the Communist government began) and ask how many years it took for the population to double. [The population in 1949 was about 540 million; it doubled by 1984 (35 years).]

  Have students identify at which stage of the Demographic Transition model China was during those years. Mention that the rate of natural increase has since dropped to 1.2 percent per year and ask at which stage of the model China is now. [Rapid population growth with short doubling times characterizes Stage 2, but the slower growth rate reflects a country at Stage 3.] Ask students to identify approximately when China's population growth rate began to decline. [The steepness of the graph flattened out a bit from about 1979 to 1989, then picked up again.]

  Finally, ask students to consider why a relatively low annual growth rate of 1.2 percent would still pose a problem for China. [Accept speculations and list these on the board; students will study this concept further in the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Geographic Inquiry into Global Issues

Lesson 3

Why is population growth a problem in China?

Glossary Words

arable land
desertification
overpopulation
water table

China has 21 percent of the world's people, but only 7 percent of the world's arable land.

lesson. The key point is that China is still experiencing tremendous absolute population growth.]

- The following activity may help students get a feel for China's population density. Inform the class that the United States and China have about the same land area (over 3.5 million square miles). Have four students move their desks to the front of the room to represent this land area. These four people, sitting at their desks, represent the population of the United States. [The population of the United States is 256 million, so each person represents about 64 million people.] Ask each person if they feel comfortable with this population density.

  China has about 4.5 times as many people as the United States. Ask the class how many students need to sit at the front four desks to simulate China's population density. [You will need a total of 18 students, each representing about 64 million people to show China's population, which is 4.5 times the U.S. population.] Ask students how it feels to be so crowded together. Also ask them to consider what problems such a dense population might create.

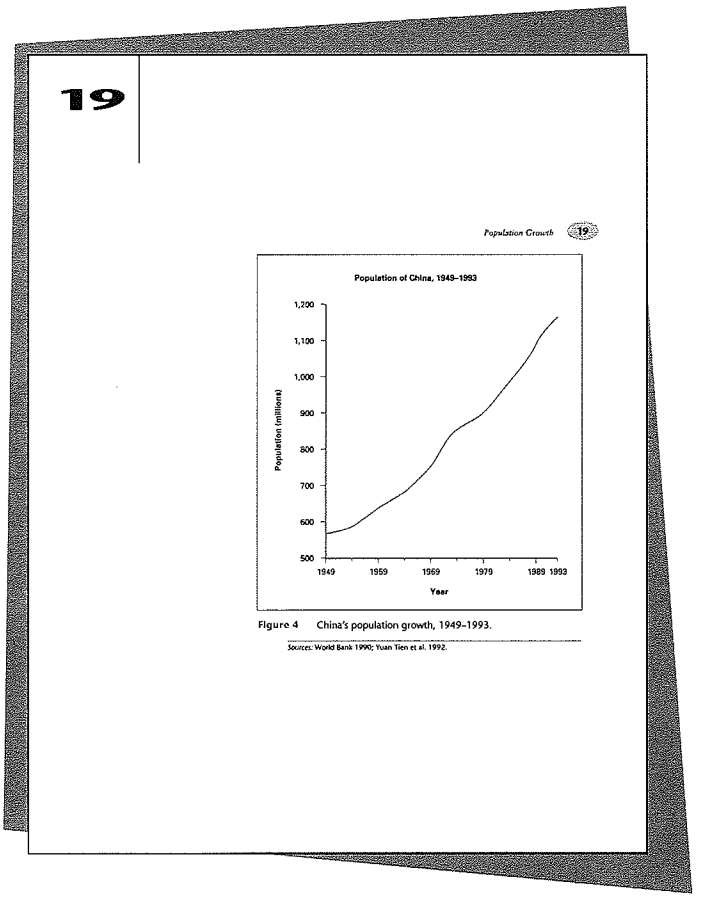

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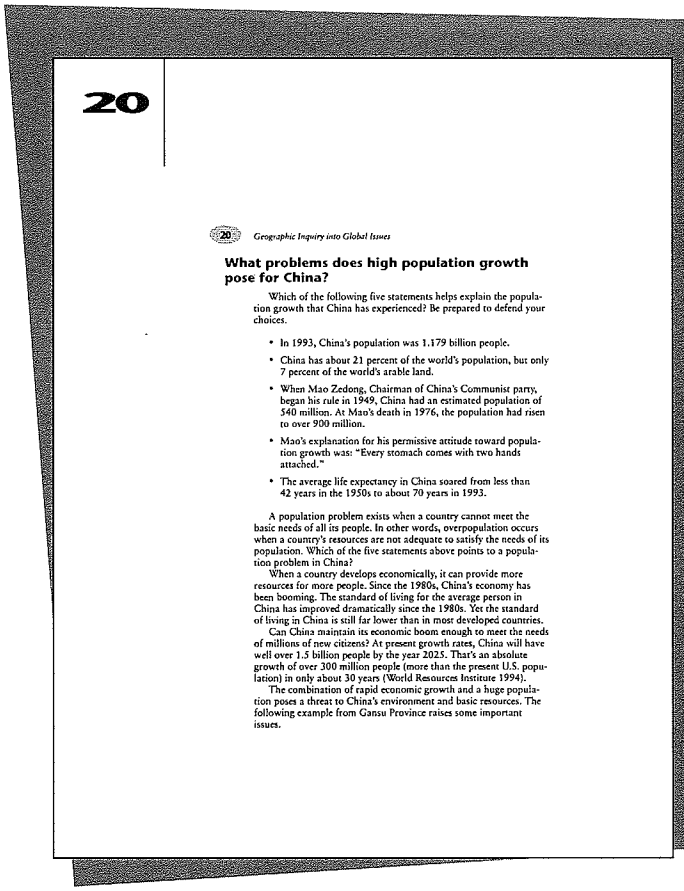
Figure 4 China's population growth, 1949–1993.

Sources: World Bank 1990; Yuan Tien et al. 1992.



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What problems does high population growth pose for China?

Which of the following five statements helps explain the population growth that China has experienced? Be prepared to defend your choices.

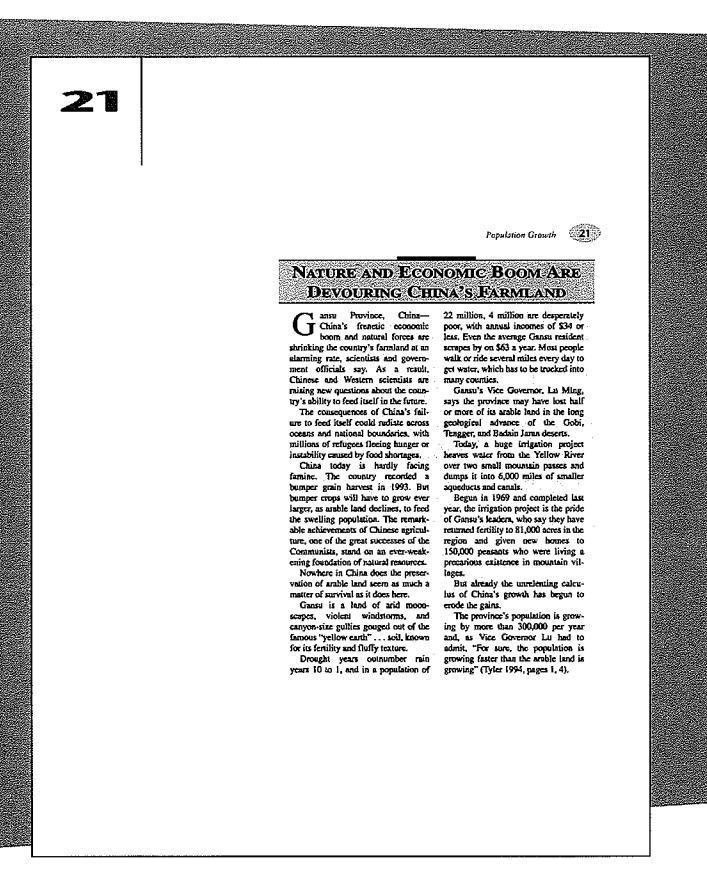
- In 1993, China's population was 1.179 billion people.
- China has about 21 percent of the world's population, but only 7 percent of the world's arable land.
- When Mao Zedong, Chairman of China's Communist party, began his rule in 1949, China had an estimated population of 540 million. At Mao's death in 1976, the population had risen to over 900 million.
- Mao's explanation for his permissive attitude toward population growth was: "Every stomach comes with two hands attached."
- The average life expectancy in China soared from less than 42 years in the 1950s to about 70 years in 1993.

A population problem exists when a country cannot meet the basic needs of all its people. In other words, overpopulation occurs when a country's resources are not adequate to satisfy the needs of its population. Which of the five statements above points to a population problem in China?

When a country develops economically, it can provide more resources for more people. Since the 1980s, China's economy has been booming. The standard of living for the average person in China has improved dramatically since the 1980s. Yet the standard of living in China is still far lower than in most developed countries.

Can China maintain its economic boom enough to meet the needs of millions of new citizens? At present growth rates, China will have well over 1.5 billion people by the year 2025. That's an absolute growth of over 300 million people (more than the present U.S. population) in only about 30 years (World Resources Institute 1994).

The combination of rapid economic growth and a huge population poses a threat to China's environment and basic resources. The following example from Gansu Province raises some important issues.



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NATURE AND ECONOMIC BOOM ARE DEVOURING CHINA'S FARMLAND

Gansu Province, China—China's frenetic economic boom and natural forces are shrinking the country's farmland at an alarming rate, scientists and government officials say. As a result, Chinese and Western scientists are raising new questions about the country's ability to feed itself in the future.

The consequences of China's failure to feed itself could radiate across oceans and national boundaries, with millions of refugees fleeing hunger or instability caused by food shortages.

China today is hardly facing famine. The country recorded a bumper grain harvest in 1993. But bumper crops will have to grow ever larger, as arable land declines, to feed the swelling population. The remarkable achievements of Chinese agriculture, one of the great successes of the Communists, stand on an ever-weakening foundation of natural resources.

Nowhere in China does the preservation of arable land seem as much a matter of survival as it does here.

Gansu is a land of arid moonscapes, violent windstorms, and canyon-size gullies gouged out of the famous "yellow earth" . . . soil, known for its fertility and fluffy texture.

Drought years outnumber rain years 10 to 1, and in a population of 22 million, 4 million are desperately poor, with annual incomes of $34 or less. Even the average Gansu resident scrapes by on $63 a year. Most people walk or ride several miles every day to get water, which has to be trucked into many counties.

Gansu's Vice Governor, Lu Ming, says the province may have lost half or more of its arable land in the long geological advance of the Gobi, Tengger, and Badain Jaran deserts.

Today, a huge irrigation project heaves water from the Yellow River over two small mountain passes and dumps it into 6,000 miles of smaller aqueducts and canals.

Begun in 1969 and completed last year, the irrigation project is the pride of Gansu's leaders, who say they have returned fertility to 81,000 acres in the region and given new homes to 150,000 peasants who were living a precarious existence in mountain villages.

But already the unrelenting calculus of China's growth has begun to erode the gains.

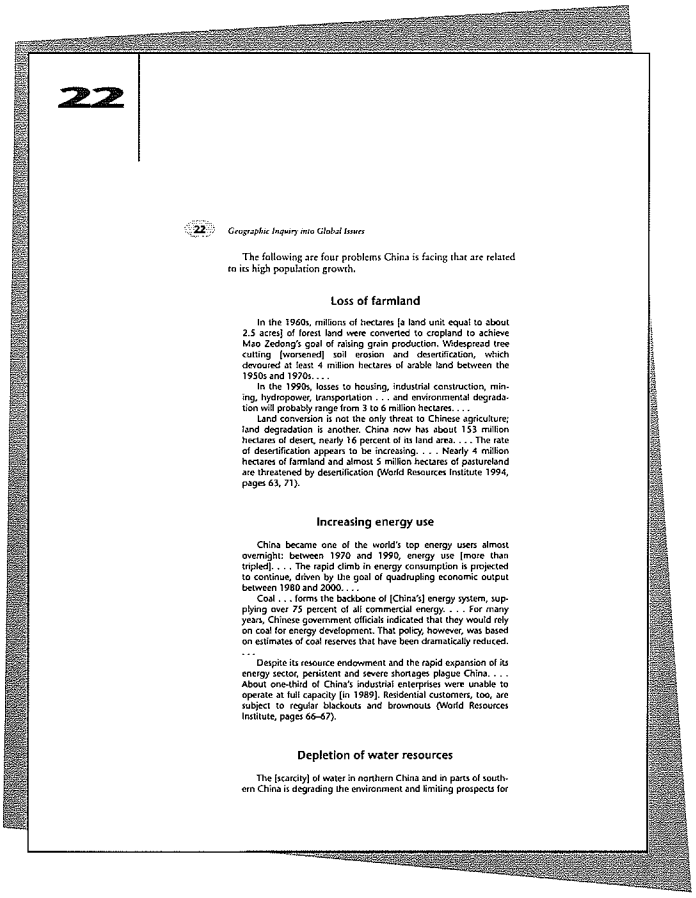
The province's population is growing by more than 300,000 per year and, as Vice Governor Lu had to admit, "For sure, the population is growing faster than the arable land is growing" (Tyler 1994, pages 1, 4).

Procedures

What problems does high population growth pose for China? (pages 20–24)

A. Have students analyze the five bulleted statements on page 20 and identify which statements help explain China's rapid population growth. [The last two statements point to the reasons: government encouraging population growth to provide a labor supply and health care improvements increasing life expectancy.]

Have students read the next few paragraphs that discuss why overpopulation occurs—a shortage of resources compared to population. Ask students which of the five statements points to an overpopulation problem. [The second statement indicates that there is a potential shortage of adequate cropland in China. Be sure students see that the first two statements by themselves do not point to a population problem, for these only mention the population size without regard for resources. If a country has adequate resources, it could theoretically support any size population.]



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The following are four problems China is facing that are related to its high population growth.

Loss of farmland

In the 1960s, millions of hectares [a land unit equal to about 2.5 acres] of forest land were converted to cropland to achieve Mao Zedong's goal of raising grain production. Widespread tree cutting [worsened] soil erosion and desertification, which devoured at least 4 million hectares of arable land between the 1950s and 1970s. . . .

In the 1990s, losses to housing, industrial construction, mining, hydropower, transportation . . . and environmental degradation will probably range from 3 to 6 million hectares. . . .

Land conversion is not the only threat to Chinese agriculture; land degradation is another. China now has about 153 million hectares of desert, nearly 16 percent of its land area. . . . The rate of desertification appears to be increasing. . . . Nearly 4 million hectares of farmland and almost 5 million hectares of pastureland are threatened by desertification (World Resources Institute 1994, pages 63, 71).

Increasing energy use

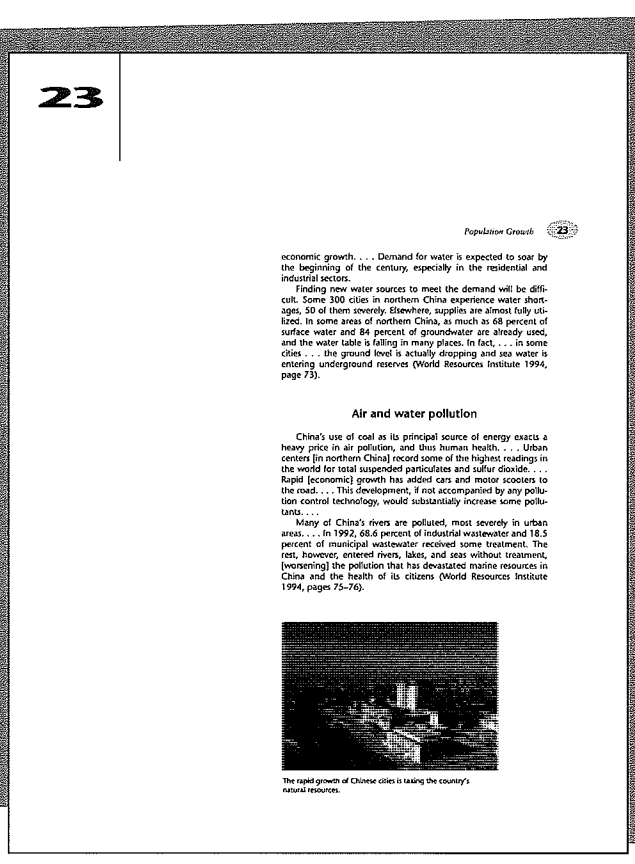
China became one of the world's top energy users almost overnight: between 1970 and 1990, energy use [more than tripled]. . . . The rapid climb in energy consumption is projected to continue, driven by the goal of quadrupling economic output between 1980 and 2000. . . .

Coal . . . forms the backbone of [China's] energy system, supplying over 75 percent of all commercial energy. . . . For many years, Chinese government officials indicated that they would rely on coal for energy development. That policy, however, was based on estimates of coal reserves that have been dramatically reduced. . . .

Despite its resource endowment and the rapid expansion of its energy sector, persistent and severe shortages plague China. . . . About one-third of China's industrial enterprises were unable to operate at full capacity [in 1989]. Residential customers, too, are subject to regular blackouts and brownouts (World Resources Institute, pages 66–67).

Depletion of water resources

The [scarcity] of water in northern China and in parts of southern China is degrading the environment and limiting prospects for



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economic growth. . . . Demand for water is expected to soar by the beginning of the century, especially in the residential and industrial sectors.

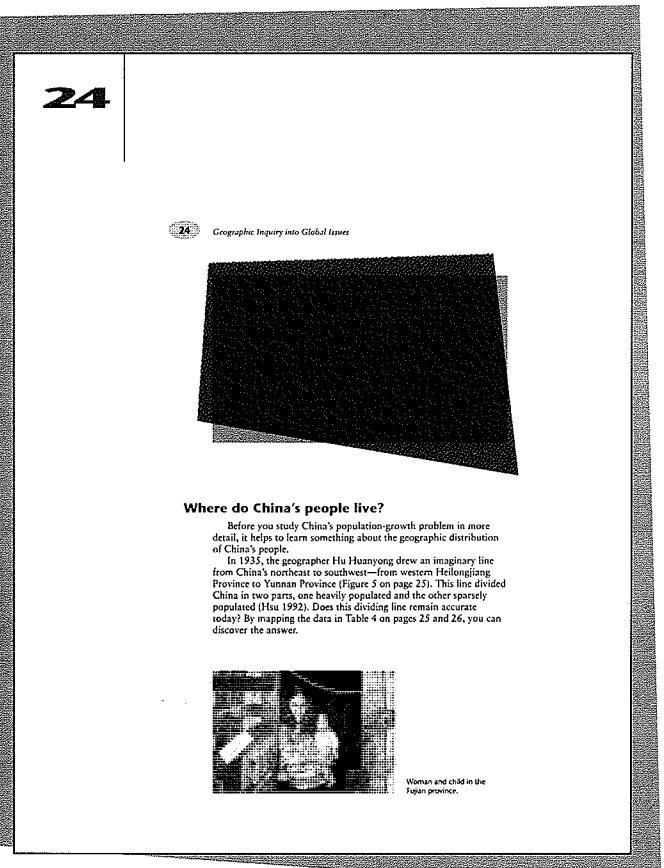
Finding new water sources to meet the demand will be difficult. Some 300 cities in northern China experience water shortages, 50 of them severely. Elsewhere, supplies are almost fully utilized. In some areas of northern China, as much as 68 percent of surface water and 84 percent of groundwater are already used, and the water table is falling in many places. In fact, . . . in some cities . . . the ground level is actually dropping and sea water is entering underground reserves (World Resources Institute 1994, page 73).

Air and water pollution

China's use of coal as its principal source of energy exacts a heavy price in air pollution, and thus human health. . . . Urban centers [in northern China] record some of the highest readings in the world for total suspended particulates and sulfur dioxide. . . . Rapid [economic] growth has added cars and motor scooters to the road. . . . This development, if not accompanied by any pollution control technology, would substantially increase some pollutants. . . .

Many of China's rivers are polluted, most severely in urban areas. . . . In 1992, 68.6 percent of industrial wastewater and 18.5 percent of municipal wastewater received some treatment. The rest, however, entered rivers, lakes, and seas without treatment, [worsening] the pollution that has devastated marine resources in China and the health of its citizens (World Resources Institute 1994, pages 75–76).

The rapid growth of Chinese cities is taxing the country's natural resources.



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24 *Geographic Inquiry into Global Issues*

Where do China's people live?

Before you study China's population-growth problem in more detail, it helps to learn something about the geographic distribution of China's people.

In 1935, the geographer Hu Huanyong drew an imaginary line from China's northeast to southwest—from western Heilongjiang Province to Yunnan Province (Figure 5 on page 25). This line divided China in two parts, one heavily populated and the other sparsely populated (Hsu 1992). Does this dividing line remain accurate today? By mapping the data in Table 4 on pages 25 and 26, you can discover the answer.

Woman and child in the Fujian province.

B. Divide the class into groups of four students each. Have each student in a group be responsible for reading one of the four sections on pages 22–23: "Loss of farmland," "Increasing energy use," "Depletion of water resources," and "Air and water pollution." The task of each student is to explain the material to the other group members, in order to address Questions 1–5 on page 24. Have groups work together to suggest policies that might alleviate these problems (Question 5).

Encourage students to list additional problems associated with high population growth, such as housing shortages, loss of forests, finding jobs for everyone, increased needs for health care, and so on. Groups can compete with one another to create the longest list.

Questions and Answers for page 24

1. Why is the loss of arable land such a crucial problem in a country with high population growth?
   - Providing food for millions of new people would require either increased production on available land or expanding the amount of farmland. Failing these solutions, a country would have to import food to feed its people. Increasing production on available land may have limits.

2. How does population growth create problems for China's energy resources?
   - Population growth, together with a developing economy, leads to a tremendous increase in demand for energy. China's coal reserves, however, may not be adequate to meet its own needs, which would necessitate finding alternative sources. This is especially important if China is to increase the standard of living for its people.

3. Why is the demand for water expected to increase in China's residential and industrial areas?
   - Water demand would increase in residential areas as the population increases and would increase in industrial areas because of efforts to develop that portion of China's economy.

4. Why could air and water pollution problems worsen with a large increase in population?
   - As populations increase, especially in China's cities, the use of polluting coal would increase to meet their energy needs. A larger population would use more motor vehicles. Also, greater city populations would increase the strain on already-inadequate water-treatment facilities.

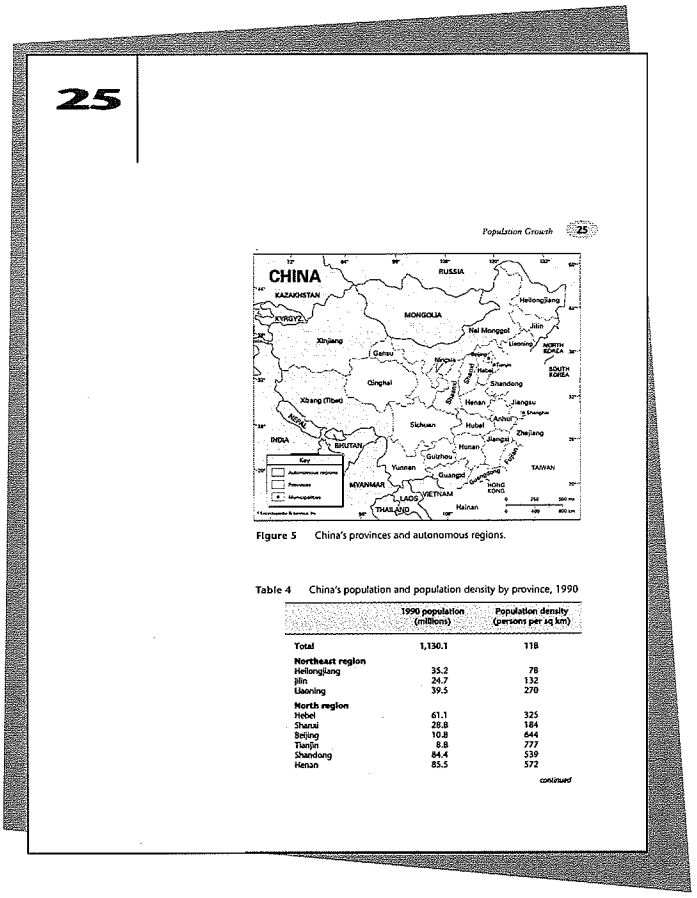
5. What policies could China's government enact to lessen resource and pollution problems?
   - Encourage speculation here; you may wish to brainstorm these ideas with the class as a whole. Students may be able to identify some of the policies that China's government has already instituted. For example, to cut losses of cropland, zoning regulations have been established to identify and preserve the best soils. Improving energy efficiency and water conservation are ways to prolong these resources. Pollution controls such as improved wastewater-treatment and use of alternative energy sources (e.g., hydropower rather than coal) would reduce air and water pollution problems.

     It is hoped that students also recognize that managing population growth is another avenue that could lessen these potential problems.

Where do China's people live? (pages 24–27)

C. This part of the lesson shows how unevenly China's population is distributed. Divide the class into pairs and give a copy of **Activity 3** to each pair. Using Activity 3 and Table 4 on pages 25 and 26 of the Student DataBook, have students map the population density of each Chinese province and autonomous region (using Figure 5 on page 25 as a locator key). One student can read the data from the table and the other can locate the province and shade in the population density, using the legend supplied on the Activity. This type of map, commonly used by geographers, is called a *choropleth* or *area-value map*. Have students post their completed maps around the room. See *Key for Activity 3*.

Activity 3 is designed for younger students in that it provides detailed instructions for the legend. You may wish to provide older students with only the base map in the Activity and have them define their own legend from the data in Table 4.



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Population Growth 25

Figure 5 China's provinces and autonomous regions.

Table 4 China's population and population density by province, 1990

	1990 population (millions)	Population density (persons per sq km)
Total	1,130.1	118
Northeast region		
Heilongjiang	35.2	78
Jilin	24.7	132
Liaoning	39.5	270
North region		
Hebei	61.1	325
Shanxi	28.8	184
Beijing	10.8	644
Tianjin	8.8	777
Shandong	84.4	539
Henan	85.5	572

continued

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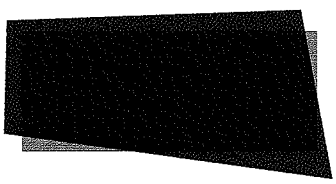
	1990 population (millions)	Population density (persons per sq km)
Total	1,130.1	118
East region		
Anhui	56.2	404
Jiangsu	67.1	654
Shanghai	13.3	2,118
Zhejiang	41.4	407
Central region		
Hubei	54.0	290
Hunan	60.0	286
Jiangxi	37.7	226
Southeast region		
Fujian	30.0	248
Guangdong	62.8	353
Guangxi	42.2	178
Hainan	6.6	193
Southwest region		
Guizhou	32.4	184
Sichuan	107.2	188
Yunnan	37.0	94
Xizang (Tibet)	2.2	2
Northwest region		
Nei Monggol	21.5	18
Shaanxi	32.9	160
Ningxia	4.7	90
Gansu	22.4	49
Qinghai	4.5	6
Xinjiang	15.2	9

Source: Yuan Tien et al. 1992.



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China's government has tried to reduce the problems associated with its large population, such as the loss of arable land and energy and water shortages. There are zoning policies to prevent the conversion of good farmland to other uses, and policies to improve energy efficiency and water conservation. But the Chinese government realizes that it also needs to manage population growth to solve these issues. In the next lesson, you will see what policies China has used to manage population growth.

D. To answer Questions 6–8 on page 26, students will need **Mini-Atlas maps 3 and 4**, which show China's physical features and precipitation, respectively. Have each pair of students join forces with another pair to work on these questions. Question 8 is complex, and you may wish to discuss this question with the class as a whole, using **Overhead 3**.

Questions and Answers for page 26

6. Where is most of China's population located?

   - Students may identify population concentrations along the east coast, starting north of Beijing, and then south to the provinces of Zhejiang and then Guangdong. They may also expand it to include those provinces between 200–300 people per square kilometer, which essentially fill out that same area.

     If you have comparable data for your state or nearby cities, it may help students to understand how densely populated eastern China is. The only two states in the United States with more than 300 people per square kilometer are New Jersey and Rhode Island. As a region, only the Middle Atlantic states (New York, New Jersey, and Pennsylvania) have more than 100 people per square kilometer. (Urban centers around the country have densities greater than this.) See *For Further Inquiry* on page 21 in this Teacher's Guide.

7. If you were to draw a line separating China into two regions—one densely populated and one sparsely populated—how would it compare to the one suggested by Hu Huanyong in 1935?

   - The placement of the two lines would be very similar. Most of the population remains concentrated to the eastern side of the line. Students may note a significant drop in density in the northeast and in Yunnan in the south, with very sparse populations in the western provinces.

8. What reasons can you give for this population-density pattern?

   - Using Mini-Atlas maps 3 and 4, students can note that the eastern half of China is generally less mountainous and receives more precipitation than the west. These factors account for the better agricultural potential of eastern China, which underlies the historic concentration of people in this part of the country.

     If you want to elaborate this point, show students Overhead 3. Use a marker to block out the areas of mountains, deserts, and high plateaus, eliminating regions that are marginally suited for intensive agriculture and dense populations. Ask students to estimate what percentage of China is capable of supporting large populations. [About one-third of China's land area is mountainous or arid.] Students can see that China's population centers have followed river valleys and open plains in the east, where precipitation is more reliable. These areas are more conducive to agriculture. Some students may note correctly that coastal settlement has also thrived as a result of sea resources such as fishing and trade.

If you have thematic classroom atlases available, older students can use additional maps that show natural vegetation, mineral resources, and agricultural products to develop a deeper understanding of the reasons why China's population is concentrated in the east.

For Further Inquiry

- Have students determine the population density of an area in which they live. This area could be a block, neighborhood, town, or larger. First have students find out the size and population of the area. Multiply the number of square miles by 2.6 to get the number of square kilometers. Divide the total population by the number of square kilometers. Compare this figure for population density to the provincial population densities of China (Table 4).
- As a link to U.S. history, have students list the types of physical features in the United States that were conducive to settlement and those that would not support large populations. Use examples from your own region or state if possible. Also, discuss how technology and economic resources were used to overcome physical barriers. For example, given enough money to pay for water-diversion projects, desert areas were made agriculturally productive in Southern California and Arizona.

Lesson 4

How has China attempted to manage its population growth?

Time Required

Two 50-minute class periods

Materials Needed

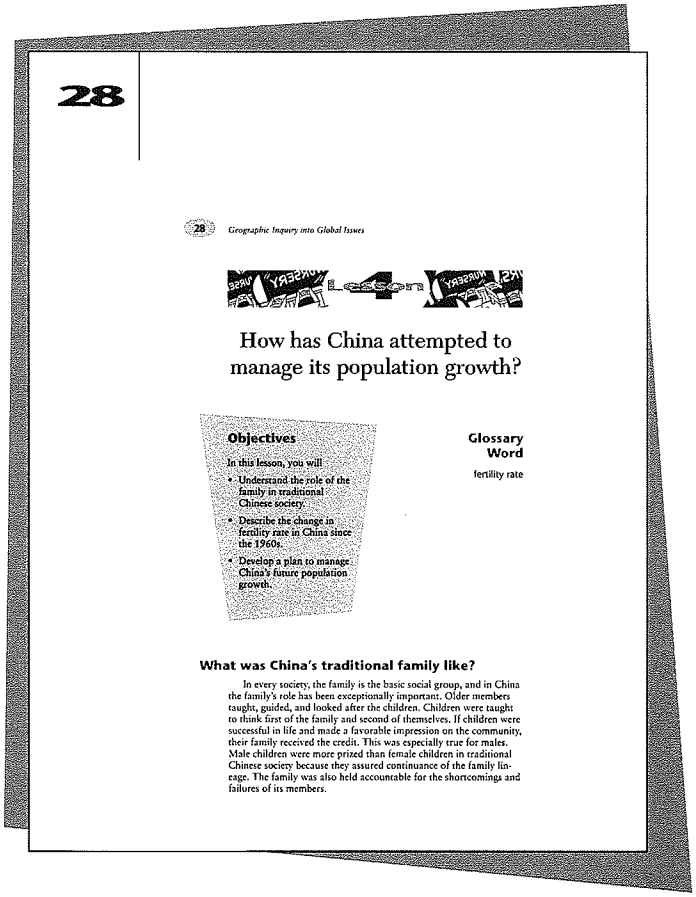
Butcher paper
Marking pens
Transparency of Overhead 4

Glossary Word

fertility rate

Getting Started

To introduce the issue of family sizes in China, focus on how family sizes have changed in the United States over the past few generations. Ask students to try to find out how many children were in their parents' and grandparents' families. Have them put this information on a slip of paper with the number of children in their own immediate families. Be sure this is done anonymously. Have teams of students compile the data and compute the class averages. The point is to emphasize that, on average, U.S. family sizes have been decreasing. Ask for speculations why this trend has occurred. [Generally it is because of the increasing urbanization of the population. Years ago in the United States, as families moved from farms to cities, their need decreased for large numbers of children to help with farming. Large families in cities were disadvantageous—wages earned in factories and offices had to be spread over many children thus reducing the standard of living for the family as a whole. Recently, family size has decreased in part because it has become more common for women to work outside the household.]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28 Geographic Inquiry into Global Issues

Lesson 4

How has China attempted to manage its population growth?

Objectives

In this lesson, you will

- Understand the role of the family in traditional Chinese society.
- Describe the change in fertility rate in China since the 1960s.
- Develop a plan to manage China's future population growth.

Glossary Word

fertility rate

What was China's traditional family like?

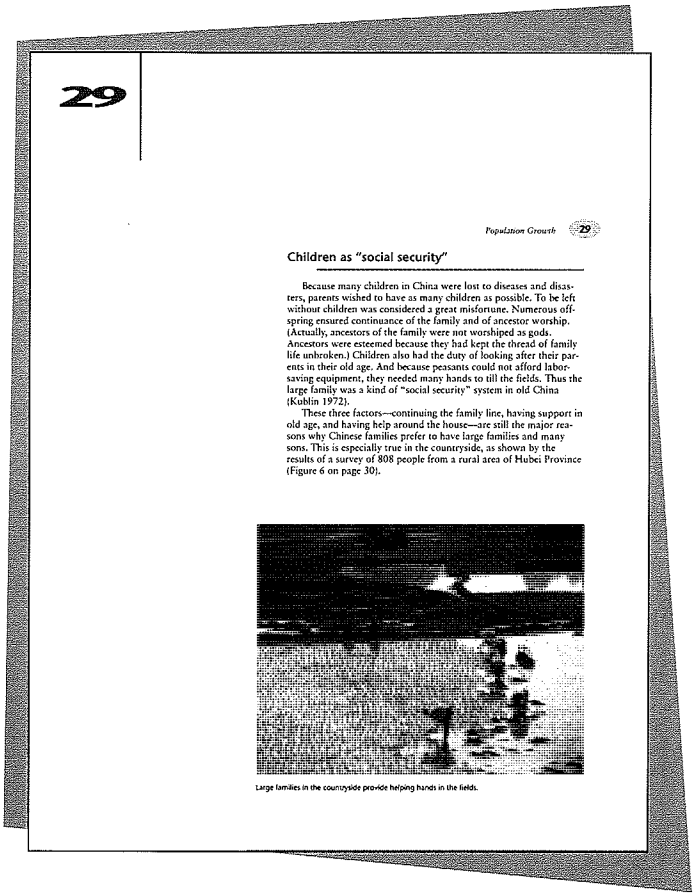
In every society, the family is the basic social group, and in China the family's role has been exceptionally important. Older members taught, guided, and looked after the children. Children were taught to think first of the family and second of themselves. If children were successful in life and made a favorable impression on the community, their family received the credit. This was especially true for males. Male children were more prized than female children in traditional Chinese society because they assured continuance of the family lineage. The family was also held accountable for the shortcomings and failures of its members.

Procedures

What was China's traditional family like? (pages 28–31)

A. Before students begin the lesson, invite discussion about the role of families in civilizations throughout history. Help them recall the universal and basic importance of the family unit. If necessary, remind students that cultures in different times and places have had differing ideals of families, often because the needs of the cultures have varied. Recall, for example, the common African model for children as described at the end of Lesson 2.

Ask: "What are families like in developing countries?" [The answers to this question will range from very limited to very detailed depending on the age level and experience of your class. This is a good place for you to interject the idea of extended family if students do not. Be sure they understand that an extended family includes not only parents and children, but also grandparents, uncles, aunts, and cousins.]



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Children as "social security"

Because many children in China were lost to diseases and disasters, parents wished to have as many children as possible. To be left without children was considered a great misfortune. Numerous offspring ensured continuance of the family and of ancestor worship. (Actually, ancestors of the family were not worshiped as gods. Ancestors were esteemed because they had kept the thread of family life unbroken.) Children also had the duty of looking after their parents in their old age. And because peasants could not afford labor-saving equipment, they needed many hands to till the fields. Thus the large family was a kind of "social security" system in old China (Kublin 1972).

These three factors—continuing the family line, having support in old age, and having help around the house—are still the major reasons why Chinese families prefer to have large families and many sons. This is especially true in the countryside, as shown by the results of a survey of 808 people from a rural area of Hubei Province (Figure 6 on page 30).

Large families in the countryside provide helping hands in the fields.

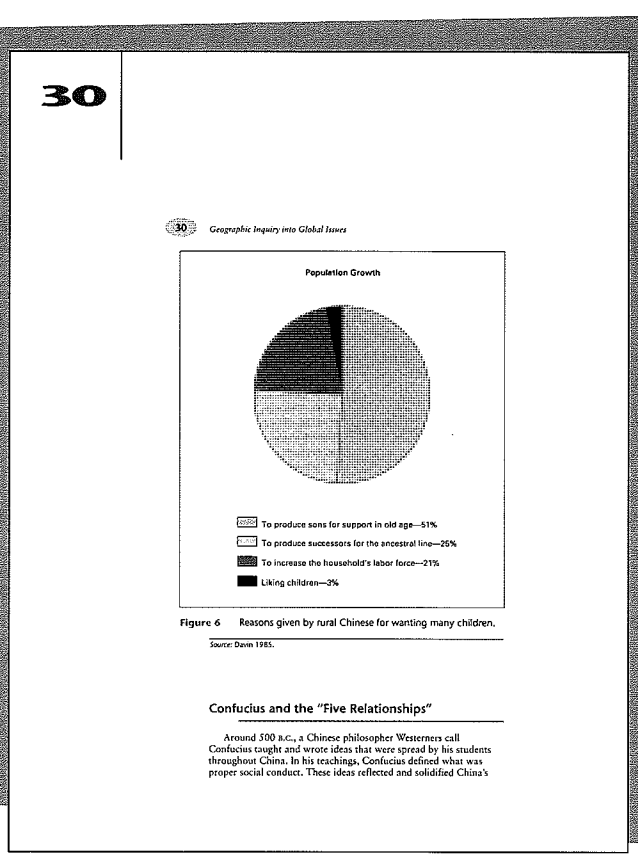

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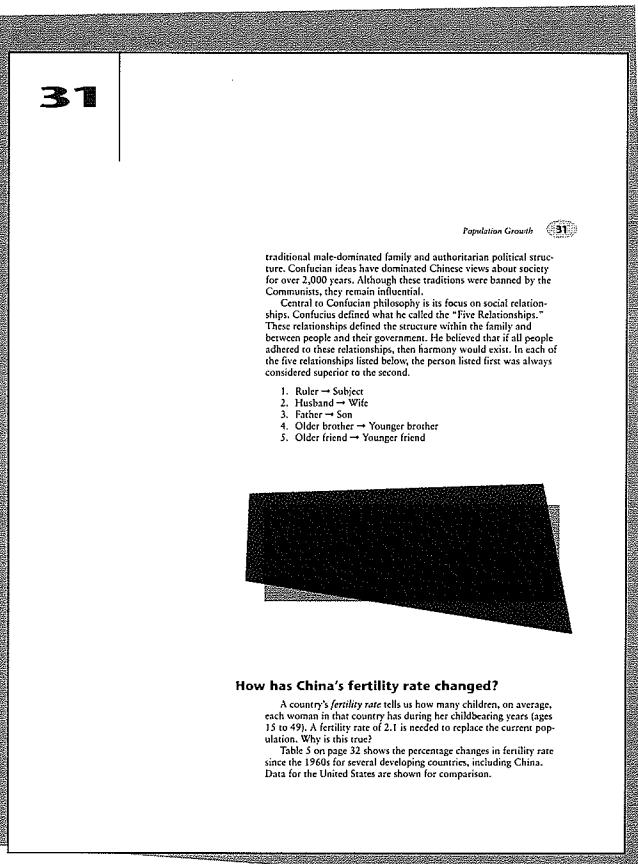
Figure 6 Reasons given by rural Chinese for wanting many children.

Source: Davin 1985.

Confucius and the "Five Relationships"

Around 500 B.C., a Chinese philosopher Westerners call Confucius taught and wrote ideas that were spread by his students throughout China. In his teachings, Confucius defined what was proper social conduct. These ideas reflected and solidified China's



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Population Growth 31

traditional male-dominated family and authoritarian political structure. Confucian ideas have dominated Chinese views about society for over 2,000 years. Although these traditions were banned by the Communists, they remain influential.

Central to Confucian philosophy is its focus on social relationships. Confucius defined what he called the "Five Relationships." These relationships defined the structure within the family and between people and their government. He believed that if all people adhered to these relationships, then harmony would exist. In each of the five relationships listed below, the person listed first was always considered superior to the second.

1. Ruler → Subject
2. Husband → Wife
3. Father → Son
4. Older brother → Younger brother
5. Older friend → Younger friend

How has China's fertility rate changed?

A country's *fertility rate* tells us how many children, on average, each woman in that country has during her childbearing years (ages 15 to 49). A fertility rate of 2.1 is needed to replace the current population. Why is this true?

Table 5 on page 32 shows the percentage changes in fertility rate since the 1960s for several developing countries, including China. Data for the United States are shown for comparison.

Encourage speculation on this question: "Why do you think families are more likely to maintain the extended arrangement in developing countries?" [Answers may include the lack of pension programs for the elderly, requiring that grandparents be cared for by the children; the agrarian society, where labor-intensive methods make large families better able to handle farming tasks; and limited mobility, resulting in succeeding generations sharing common land.]

B. Divide the class into pairs and ask students to read the text under the headings "Children as 'social security'" and "Confucius and the 'Five Relationships.'" These sections provide a brief background to the tradition of large families in China. Discuss Questions 1–3 on page 31.

Questions and Answers for page 31

1. Why were children considered a form of social security in traditional Chinese family life?
   - Reasons include the following: Having children—particularly boys—brought honor to the family; children were considered an economic asset for working in the fields; male children provided continuance of the family lineage; and the elderly were supported by the children. As Figure 6 shows, the last three of these reasons may be the most significant.

2. According to Confucius's ideas, how did age and gender influence one's position in a family relationship?
   - Women were almost totally ignored in the description of relationships, because they were not considered important enough to mention. The one reference that included women put them in an inferior position to their husbands. Also, age consistently determined one's position in a relationship, with the respect going to the older person.

3. How would you describe the traditional Chinese family?
   - Answers will vary to this open-ended question. In traditional Chinese society, family is more important than the individual. An individual's success or failure is reflected on the family. Ancestors are important because they keep the family lineage intact. Women were not honored. They had large families because there was no birth control and because their husbands' status (not theirs) depended on having many sons.

How has China's fertility rate changed? (pages 31–32)

C. The purpose of this short section is to have students realize that the fertility rate of China—as well as other developing countries—has dropped dramatically since the early 1960s. Have students read the text and Table 5. Ask students to explain why a total fertility rate of 2.1 is needed to replace a population. [Two children are needed to replace the parents, and because some children die, the rate must be slightly over 2.]

Have students use Table 5 to compare changes in China's fertility rate with the other countries shown and then answer Questions 4 and 5.

Questions and Answers for page 32

4. In the early 1960s, how many children were born into the average Chinese family? How did this compare with the family sizes of other developing countries in the 1960s? In the United States?

   - Nearly six children were born to each woman in China in the early 1960s. This is similar to the numbers in other developing countries at the time but much higher than the U.S. average.

5. According to Table 5, what has been the global pattern in fertility rate since the early 1960s? What reasons can you think of to account for this trend?

   - Note that every country listed in the table, representing all world regions, achieved some reduction in fertility rate. China and Thailand had the largest reductions. Possible reasons include an improvement in the standard of living; a change in cultural preference toward smaller family size; or perhaps families were offered some incentives to have fewer children. This last idea is central to the remainder of the lesson.

     Remind students that a drop in birth rate is the hallmark of the change from Stage 2 to Stage 3 in the Demographic Transition model. Tell students that China's demographic transition was one of the fastest in history.

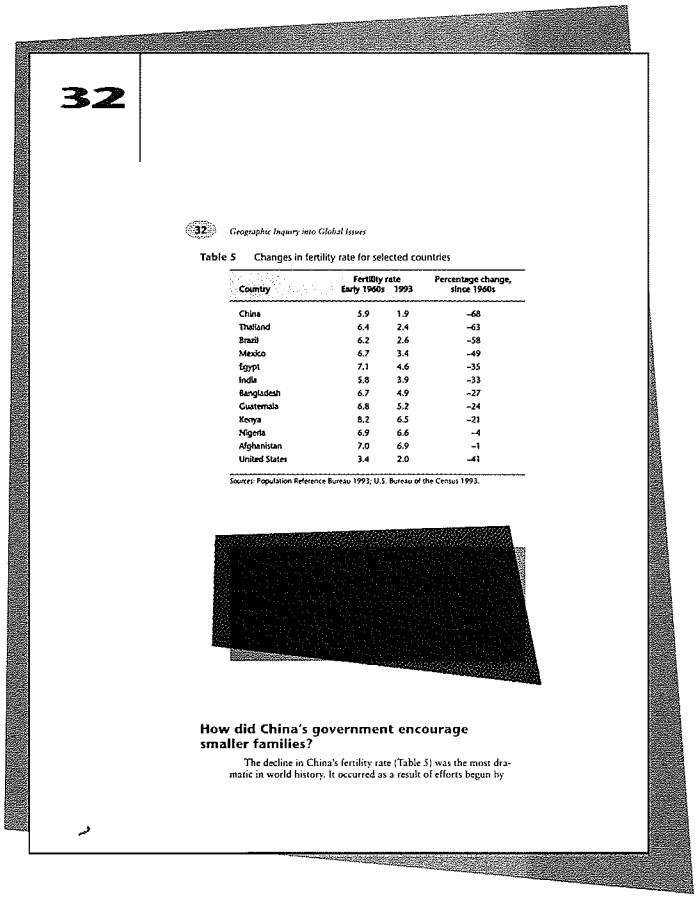

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Table 5 Changes in fertility rate for selected countries

Country	Fertility rate Early 1960s	1993	Percentage change, since 1960s
China	5.9	1.9	–68
Thailand	6.4	2.4	–63
Brazil	6.2	2.6	–58
Mexico	6.7	3.4	–49
Egypt	7.1	4.6	–35
India	5.8	3.9	–33
Bangladesh	6.7	4.9	–27
Guatemala	6.8	5.2	–24
Kenya	8.2	6.5	–21
Nigeria	6.9	6.6	–4
Afghanistan	7.0	6.9	–1
United States	3.4	2.0	–41

Sources: Population Reference Bureau 1993; U.S. Bureau of the Census 1993.

How did China's government encourage smaller families?

The decline in China's fertility rate (Table 5) was the most dramatic in world history. It occurred as a result of efforts begun by

How did China's government encourage smaller families? (pages 32–36)

D. Divide the class into cooperative learning groups of three or four students. Have groups read this section, which describes the reasons why the One-Child Policy was introduced in 1979 and outlines its general approach—promising rewards (or punishments) for couples who do (do not) adhere to the policy.

   Explain that it is the task of each group to develop a government plan to encourage the Chinese people to have smaller families. Tell students to consider the traditional cultural preferences of Chinese families and then brainstorm a policy that includes realistic strategies, given these traditions. Alternatively, have each group design its policy around the following five methods:

   - Educating citizens about the benefits of smaller families;
   - Providing access to methods that help people limit family size;
   - Creating rewards or incentives for having only one child;

- Establishing penalties for having large families; and
- Encouraging peer pressure from other citizens to be patriotic and obey the policy.

Give groups about 15 minutes to develop their plans. Provide butcher paper and marking pens to each group and have them post their completed suggestions around the room. Have each group choose a recorder and select a spokesperson to report the group's ideas to the rest of the class. If you wish, encourage groups to include drawings (along the lines of the billboard posters shown in Figure 7) that would persuade people to have only one child.

Allow each group a few minutes to present its plan to the class. Students' plans may include some of the following components:

- Birth control
- Abortion
- Educational programs
- Equality for women
- Rewards for small families
- Sterilization
- Licenses to have children
- Postponement of marriage
- Severe penalties for large families
- Social security in old age

E. Display **Overhead 4,** which shows some elements of the original One-Child Policy, and have students compare their plans to the actual Chinese plan. What are the similarities and differences? After this discussion, have student groups answer Questions 6–10 on page 35.

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Population Growth 33

China's Communist government in the 1960s to reduce population growth. At that time, the government established family planning offices at the national and provincial levels. In the 1970s, the government began campaigns to persuade Chinese couples to marry later and have fewer children. It recommended that couples have "at most two, [and] best only one" child. The fertility rate declined as the average marriage age of women increased and as family-planning messages about birth control services and abortions became more accepted (Hull and Yang 1991).

By the late 1970s, most married couples in China were having only two or three children (Banister 1987). But China's population had already exceeded 1 billion. At the current growth rates, the Chinese population would reach 1.3 billion by the turn of the century. China's leaders recognized that this extremely high absolute growth would lead to serious problems—such as shortages of farmland, housing, water, and energy.

It was clear that the dramatic decline in the fertility rate was not enough to curb China's population problem. Government leaders were convinced that stronger policies were needed to slow down population growth—otherwise, any chances for real economic growth would be lost. A government official made the following statement in late 1978:

> If a couple in our country has two children, we cannot basically change the situation in which our population growth is [too high to meet] the needs of economic development by the end of this century. Really, to solve this problem, the only way is to preach vigorously that a couple should have only one child (Banister 1987, page 183).

In 1979, China's government introduced the "One-Child Policy" in an attempt to reduce population growth and to raise the standard of living. At first, the motto of this new campaign was "One is best, at most two, never a third." The One-Child Policy promised certain rewards for couples who had only one child—and promised certain penalties for those who had more than three children. (At first, couples who had two children received neither reward nor penalty.) Recognizing that rural families had a stronger tradition of many children than urban families, the government created different rewards and penalties for rural people. Throughout China, posters on billboards promoted the benefits of limiting family size to one child (Figure 7 on page 34).

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Figure 7 Examples of billboard posters promoting the One-Child Policy of the Chinese government.

Questions and Answers for page 35

6. Do you agree that the Chinese government needs to control its population? Why or why not? Should it establish a policy that reduces population growth? Why or why not?
   - This question calls for student opinion. Ask students to defend their positions. Some students may simply note that there is a problem and that it's OK for the government to try to solve it. Others may delve into issues of privacy and individual rights, although these issues may be more relevant in a democracy than in a centrally controlled system such as China.

7. Why would the One-Child Policy need to address the traditional reasons why people chose to have large families?
   - Family-size preference is deeply rooted in Confucian traditions in China. In order to change people's behavior, the policy would need to overcome these long-standing preferences. In the One-Child Policy (Overhead 4), some incentives were old-age pensions to reduce the need for children to provide security and also better health care to improve chances of children's survival. Also, rural families were given incentives designed to reduce the need for extra labor. Other incentives may be noted by students. Traditions not addressed in the policy were maintaining family lineages by having many children, and the preference for male children.

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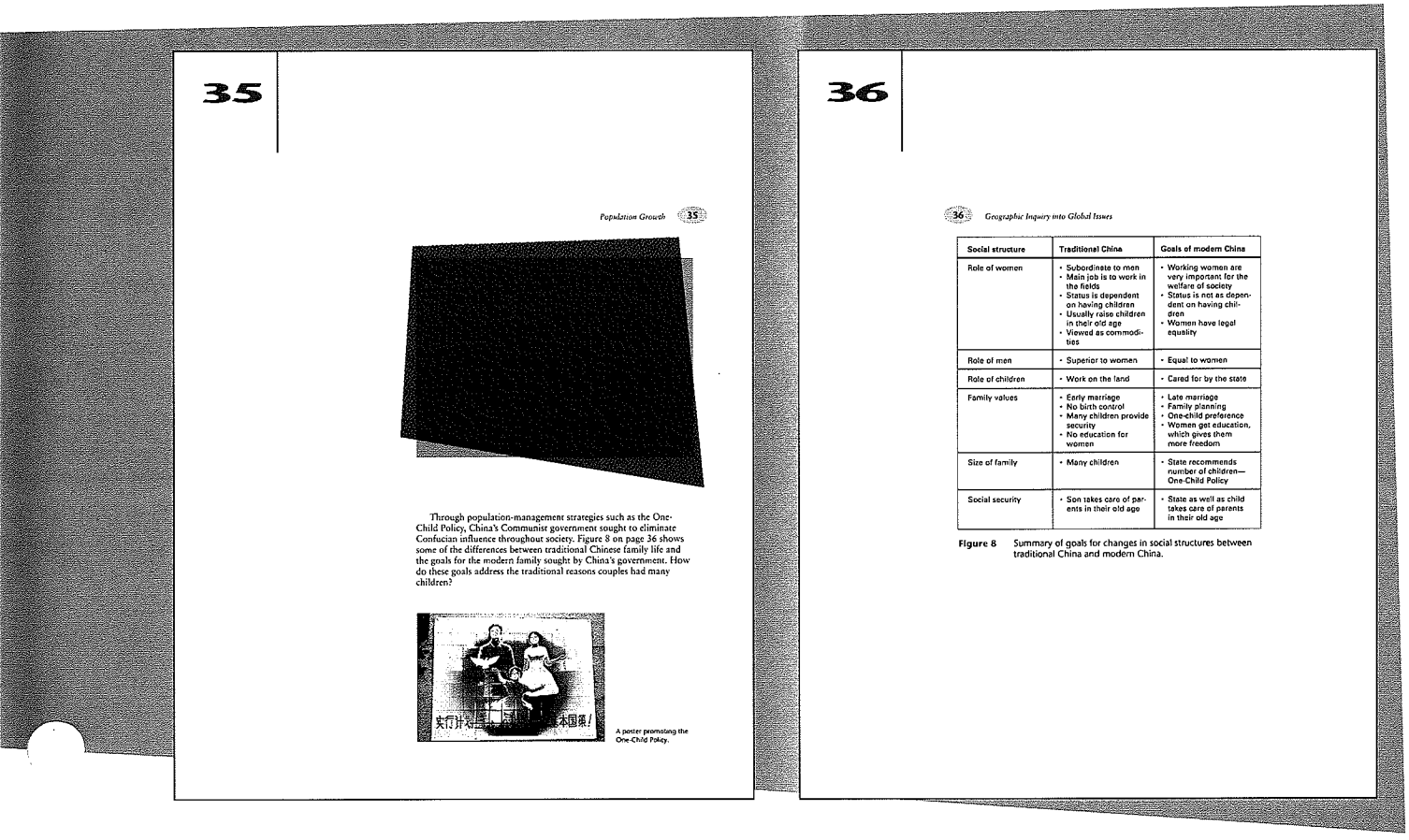

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Population Growth 35

Through population-management strategies such as the One-Child Policy, China's Communist government sought to eliminate Confucian influence throughout society. Figure 8 on page 36 shows some of the differences between traditional Chinese family life and the goals for the modern family sought by China's government. How do these goals address the traditional reasons couples had many children?

A poster promoting the One-Child Policy.

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Social structure	Traditional China	Goals of modern China
Role of women	• Subordinate to men • Main job is to work in the fields • Status is dependent on having children • Usually raise children in their old age • Viewed as commodities	• Working women are very important for the welfare of society • Status is not as dependent on having children • Women have legal equality
Role of men	• Superior to women	• Equal to women
Role of children	• Work on the land	• Cared for by the state
Family values	• Early marriage • No birth control • Many children provide security • No education for women	• Late marriage • Family planning • One-child preference • Women get education, which gives them more freedom
Size of family	• Many children	• State recommends number of children—One-Child Policy
Social security	• Son takes care of parents in their old age	• State as well as child takes care of parents in their old age

Figure 8 Summary of goals for changes in social structures between traditional China and modern China.

8. How did the billboard posters (Figure 7) portray the one-child family favorably? Why would posters be useful in promoting this policy?

   - In one image, the one-child family was portrayed as happier, more orderly, and less stressful than the family with many children. Note also that in the other drawing, the "happy couple's" only child is a girl—which was meant to defuse the preference for having sons.

     Posters are useful ways of communication, because they are inexpensive to mass produce and distribute and because they can be posted anywhere that people gather. Also, these posters are easier for people who don't read well to understand.

9. Do you think most Chinese would choose to have only one child? Why or why not?

   - Based on the sections about traditional Chinese society in the beginning of the lesson, it is likely that people would continue to have larger families because this tradition is a deeply ingrained part of the culture.

10. What information would you need to find out whether the One-Child Policy was successful?

    - Some students may point to the drop in fertility rates as evidence of the policy's success; others may recall that the rate of natural increase in China (1.2 percent) is still not as low as needed to bring population growth under control. Neither of these numerical indicators reveals whether people have actually chosen to have only one child or, having made that choice, were able to carry it out. This question leads into Lesson 5, in which some of the reactions to the policy are described.

F. As lesson closure, use Figure 8 on page 36 to compare the key changes in family structure between traditional and modern China. Discuss why the Chinese government has sought to change the role of women and children and to alter family values in order to manage population growth. [Having the state care for parents relieves children of having to act as "social security." Changing family values promotes the goal of having smaller families. The key to reducing family size is to increase the status of women through education and by promoting women's control over reproduction. Educated women can offer more to society than childbearing, which requires but a part of a woman's available intellectual energy per child. All of these goals sought to directly oppose the traditional, Confucianist social relationships, which the Communist government saw as an impediment to its population-management plans.]

Lesson 5

How well has China managed its population growth?

Time Required

Two or three 50-minute class periods

Materials Needed

Copy of Activity 4 for each pair of students
Transparency of Overhead 4 (from Lesson 4)
Transparency of Overhead 5

Glossary Words

birth rate

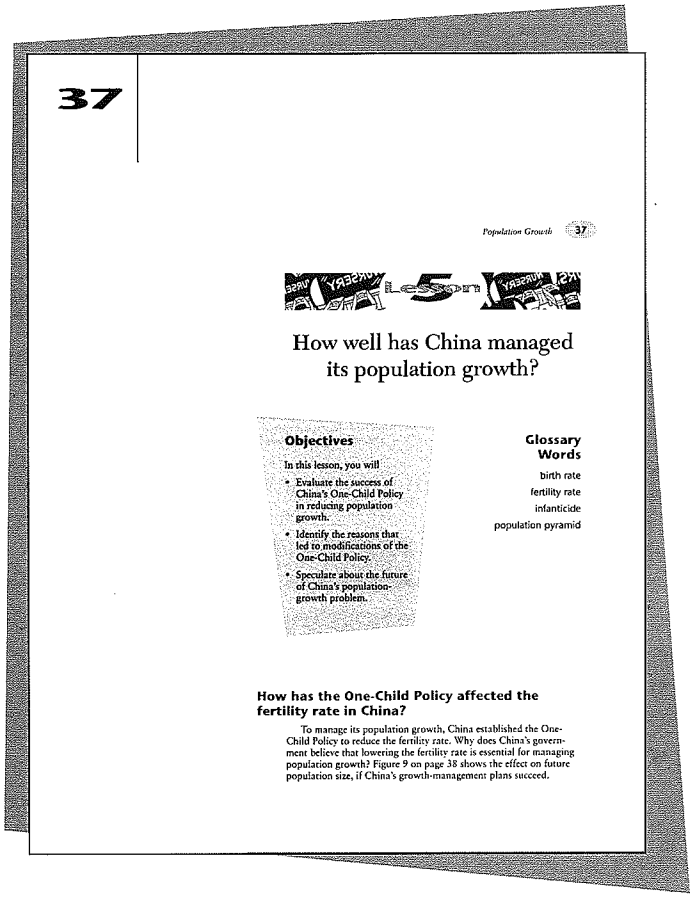
fertility rate

infanticide

population pyramid

Getting Started

As students will see in this lesson, China's One-Child Policy was not as successful as intended. Students evaluate the cultural and political factors that led to the moderation of the policy. To start students thinking about the difficulty of getting people to alter their cultural traditions, ask students how they would feel if the government told them they could not listen to the kind of music they liked. Have students imagine that they would be offered incentives (such as money) not to listen to the music—would they follow the law or find some way around it?



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Population Growth 37

Lesson 5

How well has China managed its population growth?

Objectives

In this lesson, you will

- Evaluate the success of China's One-Child Policy in reducing population growth.
- Identify the reasons that led to modifications of the One-Child Policy.
- Speculate about the future of China's population-growth problem.

Glossary Words

birth rate
fertility rate
infanticide
population pyramid

How has the One-Child Policy affected the fertility rate in China?

To manage its population growth, China established the One-Child Policy to reduce the fertility rate. Why does China's government believe that lowering the fertility rate is essential for managing population growth? Figure 9 on page 38 shows the effect on future population size, if China's growth-management plans succeed.

Procedures

How has the One-Child Policy affected the fertility rate in China? (pages 37–42)

A. To help students understand the value of the One-Child Policy in controlling absolute growth, project **Overhead 5**. The Overhead shows population projections for China based on five different fertility rates.

Ask students to study the graph in Figure 9 on page 38. Use this graph and Questions 1–3 to start class discussion on the importance of lowering the fertility rate as a population-management tool.

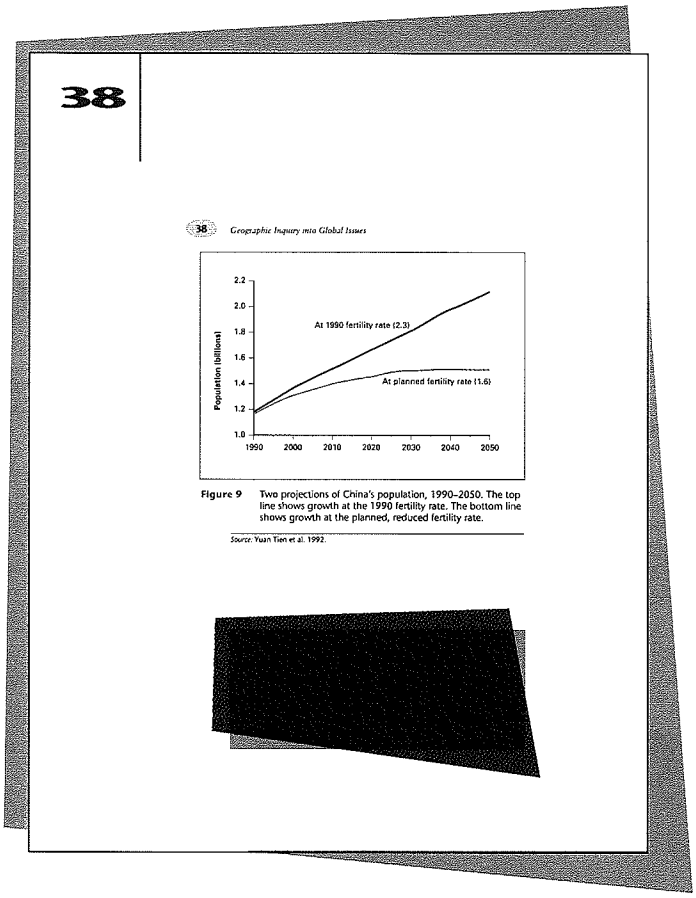

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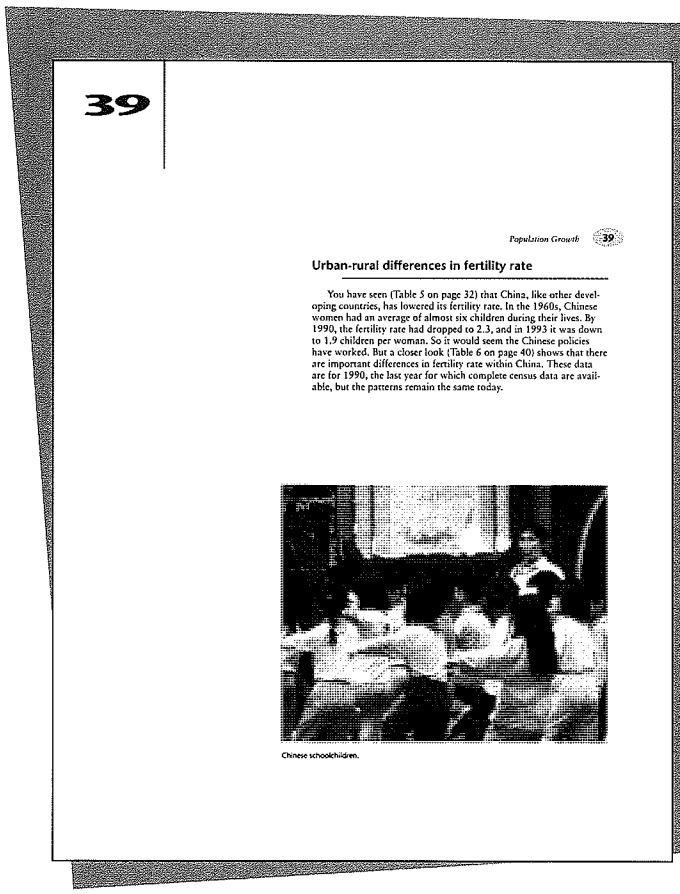
Figure 9 Two projections of China's population, 1990–2050. The top line shows growth at the 1990 fertility rate. The bottom line shows growth at the planned, reduced fertility rate.

Source: Yuan Tien et al. 1992.



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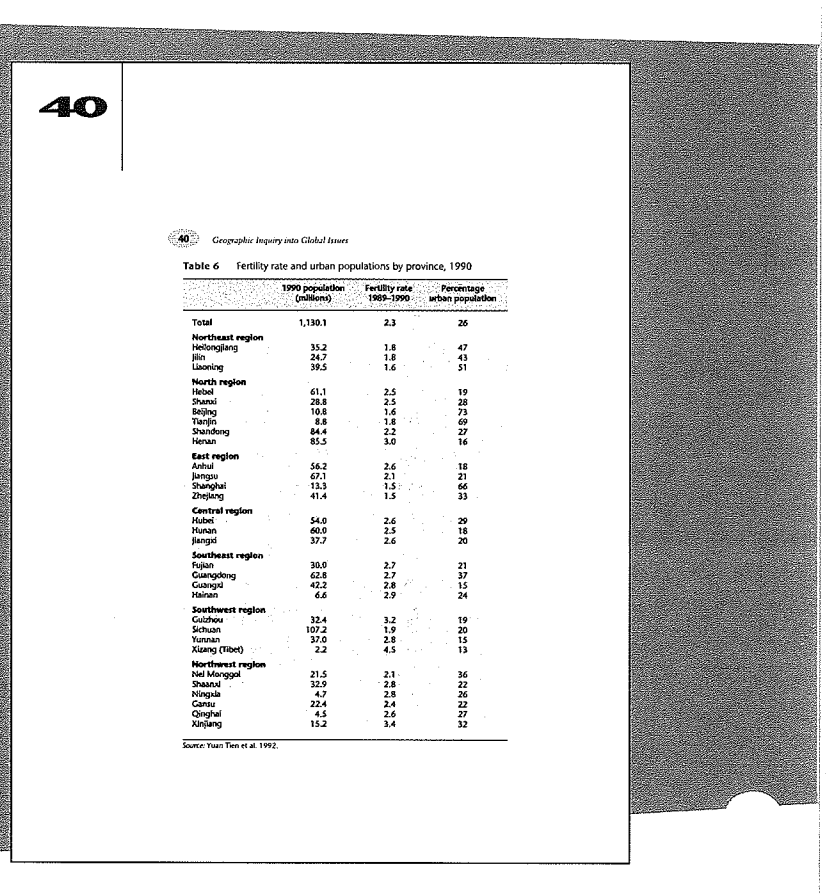
Population Growth 39

Urban-rural differences in fertility rate

You have seen (Table 5 on page 32) that China, like other developing countries, has lowered its fertility rate. In the 1960s, Chinese women had an average of almost six children during their lives. By 1990, the fertility rate had dropped to 2.3, and in 1993 it was down to 1.9 children per woman. So it would seem the Chinese policies have worked. But a closer look (Table 6 on page 40) shows that there are important differences in fertility rate within China. These data are for 1990, the last year for which complete census data are available, but the patterns remain the same today.

Chinese schoolchildren.



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40 *Geographic Inquiry into Global Issues*

Table 6 Fertility rate and urban populations by province, 1990

	1990 population (millions)	Fertility rate 1989–1990	Percentage urban population
Total	1,130.1	2.3	26
Northeast region			
Heilongjiang	35.2	1.8	47
Jilin	24.7	1.8	43
Liaoning	39.5	1.6	51
North region			
Hebei	61.1	2.5	19
Shanxi	28.8	2.5	28
Beijing	10.8	1.6	73
Tianjin	8.8	1.8	69
Shandong	84.4	2.2	27
Henan	85.5	3.0	16
East region			
Anhui	56.2	2.6	18
Jiangsu	67.1	2.1	21
Shanghai	13.3	1.5	66
Zhejiang	41.4	1.5	33
Central region			
Hubei	54.0	2.6	29
Hunan	60.0	2.5	18
Jiangxi	37.7	2.6	20
Southeast region			
Fujian	30.0	2.7	21
Guangdong	62.8	2.7	37
Guangxi	42.2	2.8	15
Hainan	6.6	2.9	24
Southwest region			
Guizhou	32.4	3.2	19
Sichuan	107.2	1.9	20
Yunnan	37.0	2.8	15
Xizang (Tibet)	2.2	4.5	13
Northwest region			
Nei Monggol	21.5	2.1	36
Shaanxi	32.9	2.8	22
Ningxia	4.7	2.8	26
Gansu	22.4	2.4	22
Qinghai	4.5	2.6	27
Xinjiang	15.2	3.4	32

Source: Yuan Tien et al. 1992.

Questions and Answers for page 38

1. What is the difference between the two projected populations in 2050?
   - The population in 2050 at the 1990 fertility rate would be about about 2.2 billion; at the planned fertility rate the total would be around 1.5 billion—a difference of 700 million people.

2. Why do you think the planned fertility rate shown in Figure 9 was 1.6, if the government's goal was for each woman to have only one child?
   - It is clear that if every woman had one child, the fertility rate would be 1.0—not 1.6. Students may speculate that the difference is owed to the recognition that not all women would have only one child. This issue is followed up in more detail in this lesson.

3. Which groups in China do you think would be hardest to persuade to have only one child?
   - Have students speculate which groups might be most difficult to persuade; put their guesses on the chalkboard. Students may suspect rightly that the people in rural areas would be hardest to change because of their tradition of large families.

B. Have students pair off and write a hypothesis based on the following question: What is the relationship between fertility rates and the degree of urbanization in China? After a few minutes, ask some students to read their hypotheses and write them on the chalkboard. Without commenting on the hypotheses, tell students that they will examine data in Table 6 on page 40 to help them determine this relationship.

Have student pairs examine Table 6 and note that the national average for China is 26 percent urban. Ask if students know what the percentage of urban population is in the United States [about 75 percent]. Inform students that although a very large proportion of China's population still lives in the countryside, rural-to-urban migration is changing these numbers somewhat.

Distribute Activity 4 to each pair of students. Students will make a scattergram using the data on fertility rate and percentage of urban population from Table 6. In a scattergram, each point represents the intersection of the two variables for each province. Thus, students will plot a total of 30 points (see *Key for Activity 4*).

If this graphing is too difficult for younger students, an alternative is to have them do this as a mapping activity. Provide copies of the base map used in Activity 3. Have students shade in the six provinces with an urban population over 40 percent. Next, have them place a crosshatch symbol in the seven provinces with fertility rates less than 1.9. Students can compare the overlapping patterns to note that higher urbanization is associated with lower fertility.

Questions and Answers for page 41

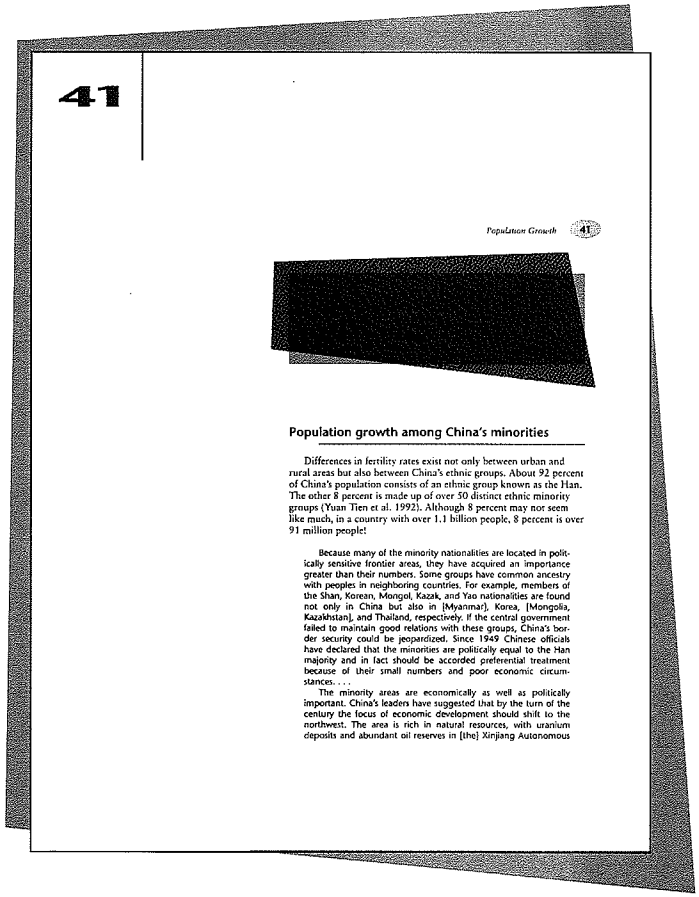
4. Why do you think the fertility rates in provinces with mostly rural areas differ from those in provinces with more urban populations?

   - Students may suggest that China's population-management policy was more effective in cities because the government could more easily enforce laws in densely populated areas. Also, urban families tend to have fewer children than rural families because children aren't needed to help work on a farm.

     Another important factor, which students may not recognize, is that urban Chinese generally are better educated than rural Chinese. So, urban families usually have higher incomes and less need of support from their children in old age. This led to an inequity in the One-Child Policy, because the financial penalties were levied on the poorer, rural families that could afford it least. Urban families, which already had some economic advantages, received rewards for having only one child. This urban-rural inequity was a key reason the policy was softened (Banister 1987).

5. What kinds of programs might help reduce the fertility rate in rural areas?

   - Have students brainstorm this question for a few minutes. Display **Overhead** 4 again to remind students of some of the programs that were aimed at reducing the need for children in rural areas (for example, guaranteeing social security for childless couples; increasing the grain ration and land allotments for single children). The key is that students recognize that programs would have to overcome the ancient tradition for large families in rural areas.



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Population Growth 41

Population growth among China's minorities

Differences in fertility rates exist not only between urban and rural areas but also between China's ethnic groups. About 92 percent of China's population consists of an ethnic group known as the Han. The other 8 percent is made up of over 50 distinct ethnic minority groups (Yuan Tien et al. 1992). Although 8 percent may not seem like much, in a country with over 1.1 billion people, 8 percent is over 91 million people!

Because many of the minority nationalities are located in politically sensitive frontier areas, they have acquired an importance greater than their numbers. Some groups have common ancestry with peoples in neighboring countries. For example, members of the Shan, Korean, Mongol, Kazak, and Yao nationalities are found not only in China but also in [Myanmar], Korea, [Mongolia, Kazakhstan], and Thailand, respectively. If the central government failed to maintain good relations with these groups, China's border security could be jeopardized. Since 1949 Chinese officials have declared that the minorities are politically equal to the Han majority and in fact should be accorded preferential treatment because of their small numbers and poor economic circumstances. . . .

The minority areas are economically as well as politically important. China's leaders have suggested that by the turn of the century the focus of economic development should shift to the northwest. The area is rich in natural resources, with uranium deposits and abundant oil reserves in [the] Xinjiang Autonomous

C. After students complete Activity 4, have them return to their hypotheses. Based on what they have graphed, have them rewrite their hypotheses as needed. [The hypotheses should now state that fertility tends to be highest in those provinces that have the lowest rates of urbanization.] Ask students if this is a perfect relationship. [If it were, all points on the graph would be on the same straight line. Students can note that fertility rates are not in direct proportion to urbanization rates in all provinces, but the general tendency when looking at all provinces together is for the above hypothesis to hold. Explain that these kinds of imperfect relationships that suggest strong trends are often found in geographical data.]

   Have the pairs work together to answer Questions 4 and 5.

Questions and Answers for page 42

6. Look at the location of the autonomous regions in Figure 5. Why do you think minorities were not included in the One-Child Policy?

   - Students may see that these regions are located along China's borders. Students may identify political security as one reason for not enforcing some policies in these areas, as noted in the extract from Worden et al.

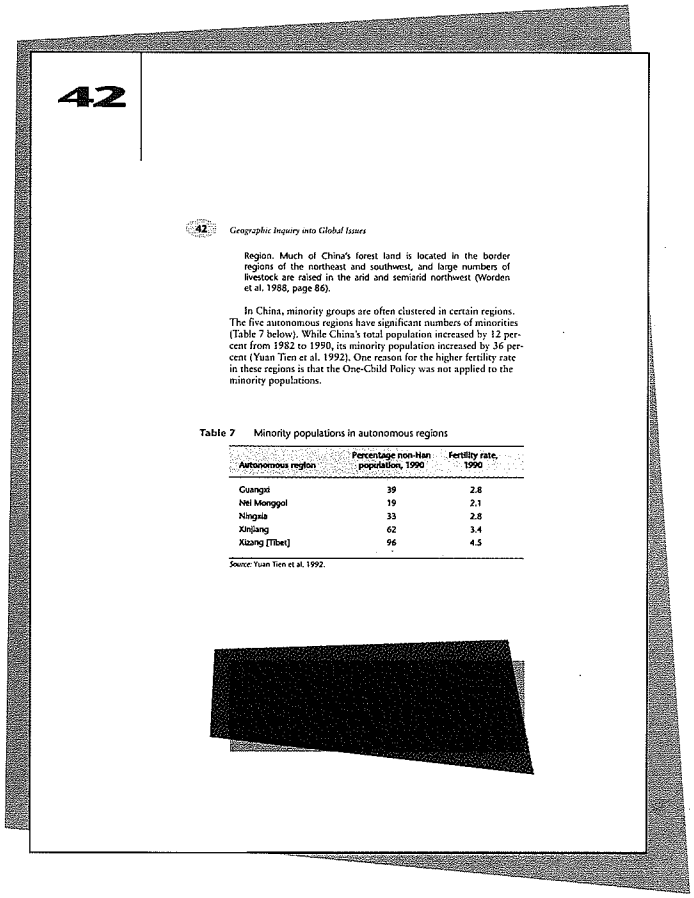
     Also, the greater distance from Beijing may make it more difficult for the central government to impose strict controls on these regions. Minorities may also be more resistant than the majority Han people to policies that alter traditional patterns of large families.

7. Based on Table 7, what can you conclude about the future importance of non-Han peoples in China?

   - Because regions that include high percentages of non-Han peoples have higher rates of population growth, it can be concluded that the relative proportion of minorities to Han Chinese will increase. This fact is likely to increase the relative importance of the minority groups.

D. Another factor that limited the success of the One-Child Policy was that it was never enforced for China's minorities. Have students read the text under "Population growth among China's minorities," which will help students understand the political and economic importance of China's minority regions.

Have students compare the fertility rates in Table 7 (page 42) of the autonomous regions with the fertility rates of the other provinces in Table 6. [Note that the two regions with the highest percentages of minorities also have the two highest fertility rates (Xizang/Tibet and Xinjiang).] Discuss Questions 6 and 7 on page 42.



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Region. Much of China's forest land is located in the border regions of the northeast and southwest, and large numbers of livestock are raised in the arid and semiarid northwest (Worden et al. 1988, page 86).

In China, minority groups are often clustered in certain regions. The five autonomous regions have significant numbers of minorities (Table 7 below). While China's total population increased by 12 percent from 1982 to 1990, its minority population increased by 36 percent (Yuan Tien et al. 1992). One reason for the higher fertility rate in these regions is that the One-Child Policy was not applied to the minority populations.

Table 7 Minority populations in autonomous regions

Autonomous region	Percentage non-Han population, 1990	Fertility rate, 1990
Guangxi	39	2.8
Nei Monggol	19	2.1
Ningxia	33	2.8
Xinjiang	62	3.4
Xizang [Tibet]	96	4.5

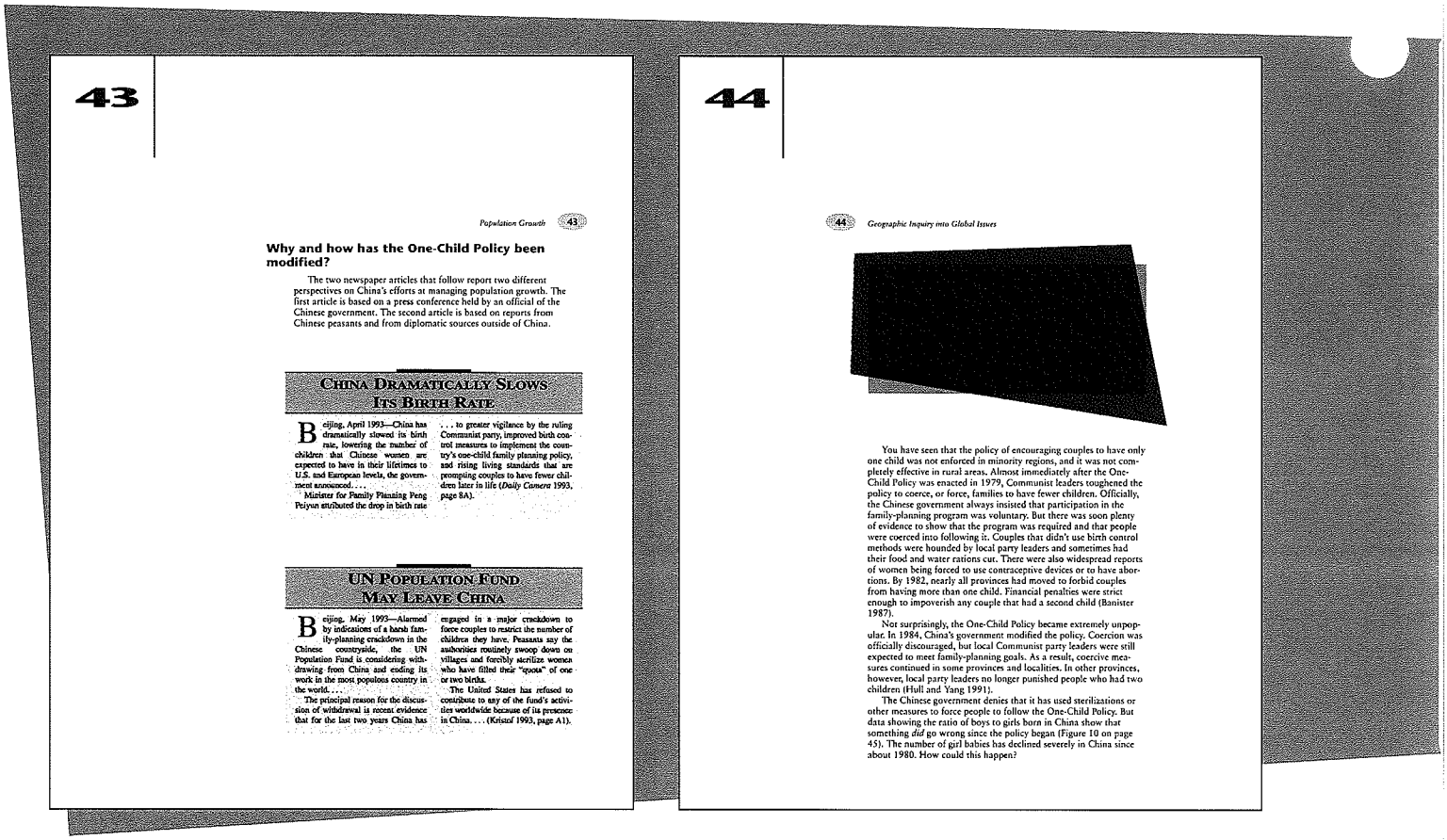
Source: Yuan Tien et al. 1992.

Why and how has the One-Child Policy been modified? (pages 43–46)

E. This section presents text that may deeply trouble students and that puts the One-Child Policy in an unfavorable light. However, the issues presented regarding gender equity in the developing world are critical to understanding the problems of managing population growth.

Divide the class into groups of two to four students, and have them read the two news articles: "China Dramatically Slows Its Birth Rate" and "UN Population Fund May Leave China." Discuss Questions 8–11 on page 44 in groups or with the class as a whole. Alternatively, have students express their individual feelings about these articles by writing a short paragraph.

F. Have the groups read the text following Question 11, which describes how the One-Child Policy apparently evolved from a relatively benign recommendation about family size to a more coercive program in the early 1980s. Note that the evidence for coercion has always been contested by the Chinese government. Ultimately, the policy was amended and coercion was officially discouraged, but there remain allegations of human-rights abuses. This is a controversial topic in itself, and you may wish to have students consider why the Chinese government adamantly maintains that these coercive measures do not occur. [The key here is that China's international standing, economic aid, and trade status with Western countries may be affected by its stance on human rights.]



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Population Growth 43

Why and how has the One-Child Policy been modified?

The two newspaper articles that follow report two different perspectives on China's efforts at managing population growth. The first article is based on a press conference held by an official of the Chinese government. The second article is based on reports from Chinese peasants and from diplomatic sources outside of China.

CHINA DRAMATICALLY SLOWS ITS BIRTH RATE

Beijing, April 1993—China has dramatically slowed its birth rate, lowering the number of children that Chinese women are expected to have in their lifetimes to U.S. and European levels, the government announced....

Minister for Family Planning Peng Peiyun attributed the drop in birth rate . . . to greater vigilance by the ruling Communist party, improved birth control measures to implement the country's one-child family planning policy, and rising living standards that are prompting couples to have fewer children later in life (*Daily Camera* 1993, page 8A).

UN POPULATION FUND MAY LEAVE CHINA

Beijing, May 1993—Alarmed by indications of a harsh family-planning crackdown in the Chinese countryside, the UN Population Fund is considering withdrawing from China and ending its work in the most populous country in the world. . . .

The principal reason for the discussion of withdrawal is recent evidence that for the last two years China has engaged in a major crackdown to force couples to restrict the number of children they have. Peasants say the authorities routinely swoop down on villages and forcibly sterilize women who have filled their "quota" of one or two births.

The United States has refused to contribute to any of the fund's activities worldwide because of its presence in China. . . . (Kristof 1993, page A1).

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You have seen that the policy of encouraging couples to have only one child was not enforced in minority regions, and it was not completely effective in rural areas. Almost immediately after the One-Child Policy was enacted in 1979, Communist leaders toughened the policy to coerce, or force, families to have fewer children. Officially, the Chinese government always insisted that participation in the family-planning program was voluntary. But there was soon plenty of evidence to show that the program was required and that people were coerced into following it. Couples that didn't use birth control methods were hounded by local party leaders and sometimes had their food and water rations cut. There were also widespread reports of women being forced to use contraceptive devices or to have abortions. By 1982, nearly all provinces had moved to forbid couples from having more than one child. Financial penalties were strict enough to impoverish any couple that had a second child (Banister 1987).

Not surprisingly, the One-Child Policy became extremely unpopular. In 1984, China's government modified the policy. Coercion was officially discouraged, but local Communist party leaders were still expected to meet family-planning goals. As a result, coercive measures continued in some provinces and localities. In other provinces, however, local party leaders no longer punished people who had two children (Hull and Yang 1991).

The Chinese government denies that it has used sterilizations or other measures to force people to follow the One-Child Policy. But data showing the ratio of boys to girls born in China show that something *did* go wrong since the policy began (Figure 10 on page 45). The number of girl babies has declined severely in China since about 1980. How could this happen?

Questions and Answers for page 44

8. How does the wording of each news article provoke certain reactions from the reader?
   - The first article presents a rather positive listing of the accomplishments of the Chinese government. The second article uses much more inflammatory language (e.g., "authorities swoop down on villages and forcibly sterilize") to provoke feelings of anger at the Chinese policies.

9. What evidence in the first article indicates how important family planning is to the Chinese government?
   - The fact that China has a Minister for Family Planning is evidence in itself. Also note how lowering birth rates is linked to the Communist party's "vigilance."

10. Did your opinion about the slowing of China's birth rate change as you read the second article? If so, how?
    - Although this is an opinion question, students may be shocked by the first mention of forced sterilizations as one way that the Chinese are allegedly lowering birth rates.

11. What would be the advantages and disadvantages of UN withdrawal of its population programs in China?
    - Encourage speculation here. If the UN withdraws, the force of international condemnation might persuade the Chinese government to abandon coercive measures. On the other hand, without a UN presence, the Chinese might be able to continue or expand use of coercive measures. Ask students what they think the UN ought to do in this situation.

Have the class discuss the implications of Figure 10 on page 45. This shows a clear increase in the ratio of males to females born since the One-Child Policy went into effect. Although it is possible that the dramatic increase in male babies is caused by couples simply not reporting their baby girls, a disturbing conclusion could be that girls are victims of female infanticide or are being abandoned at birth. In any case, Figure 10 indicates that female babies may be seriously mistreated in China. Use Questions 12–14 for discussion of this sensitive issue.

It should be noted that not all people believe that cultural change is a worthwhile goal, as mentioned in the discussion of Question 14. There are those who believe that Western values, such as gender equity, should not be imposed on other cultures. You may want to have older students debate this issue.

Questions and Answers for page 46

12. How do the data in Figure 10 support the idea in the quote from Yuan Tien et al. that girls are "missing"?

    - The number of male babies in the Chinese population is disproportionately high compared to the normal ratio of sexes in human populations. And in the 1980s and 1990s, male dominance increased even more. So the data support the idea that girls were missing and raise the question: What happened to the girl babies?

13. Why would Chinese parents murder, abandon, or fail to report their girl babies, as is mentioned in the quote?

    - These are the severe results of the Chinese government's One-Child Policy and the traditional Confucian view, as discussed in Lesson 4, giving strong preference for males over females. Today's "ideal" Chinese family—as defined by the combination of government policy and Confucian tradition—is two parents and one son. It is likely that families are not reporting their girl children. For example, parents do not report the birth of girls because they want their "official," single child to be a son, to carry on the family lineage. Murder (infanticide) and abandonment of girl babies are also widely reported to occur.

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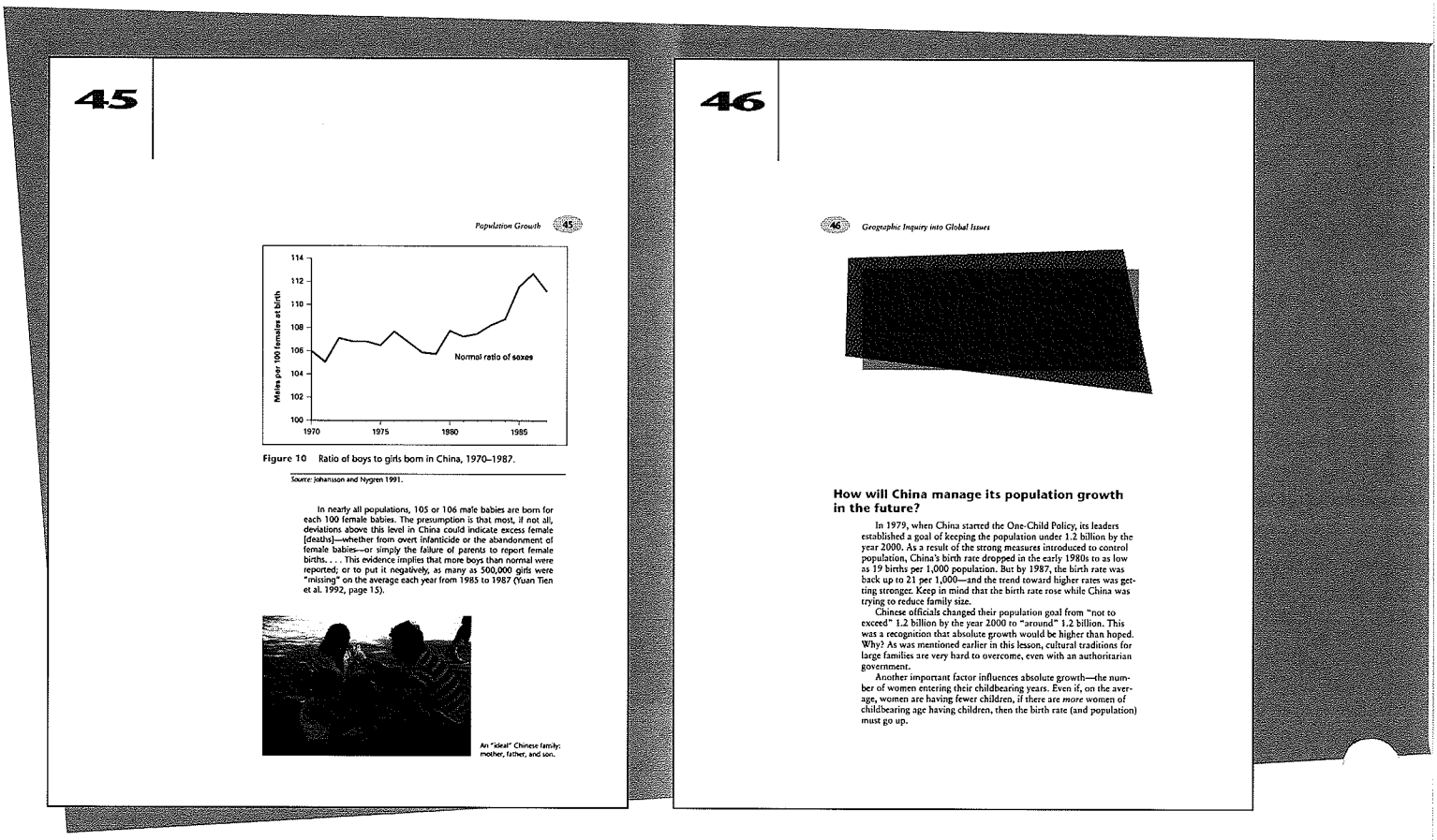

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Population Growth 45

Figure 10 Ratio of boys to girls born in China, 1970–1987.

Source: Johansson and Nygren 1991.

In nearly all populations, 105 or 106 male babies are born for each 100 female babies. The presumption is that most, if not all, deviations above this level in China could indicate excess female [deaths]—whether from overt infanticide or the abandonment of female babies—or simply the failure of parents to report female births. . . . This evidence implies that more boys than normal were reported; or to put it negatively, as many as 500,000 girls were "missing" on the average each year from 1985 to 1987 (Yuan Tien et al. 1992, page 15).

An "ideal" Chinese family: mother, father, and son.

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46 *Geographic Inquiry into Global Issues*

How will China manage its population growth in the future?

In 1979, when China started the One-Child Policy, its leaders established a goal of keeping the population under 1.2 billion by the year 2000. As a result of the strong measures introduced to control population, China's birth rate dropped in the early 1980s to as low as 19 births per 1,000 population. But by 1987, the birth rate was back up to 21 per 1,000—and the trend toward higher rates was getting stronger. Keep in mind that the birth rate rose while China was trying to reduce family size.

Chinese officials changed their population goal from "not to exceed" 1.2 billion by the year 2000 to "around" 1.2 billion. This was a recognition that absolute growth would be higher than hoped. Why? As was mentioned earlier in this lesson, cultural traditions for large families are very hard to overcome, even with an authoritarian government.

Another important factor influences absolute growth—the number of women entering their childbearing years. Even if, on the average, women are having fewer children, if there are *more* women of childbearing age having children, then the birth rate (and population) must go up.

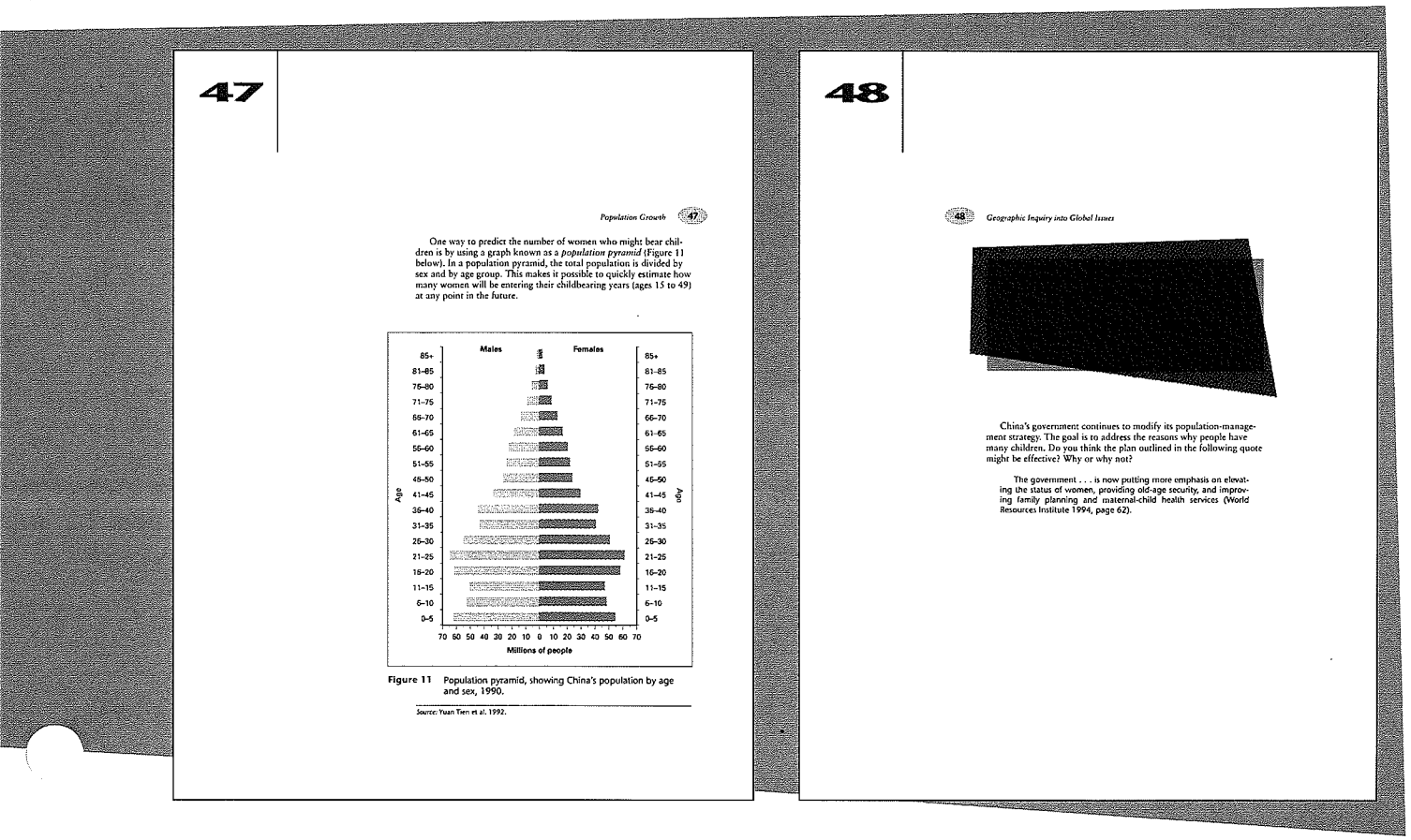
14. What measures could be taken to decrease the number of "missing" girls?

    - Students are likely to identify improving the status of women. This idea was being addressed even before the One-Child Policy was instituted. Equality for women is a goal of China's government, with women having equal opportunity for education and jobs (see Figure 8 on page 36). However, the subordination of women has been a traditional value that hasn't been easy to change. Although China's goals include equality, actual practice varies by province and by family. The low value placed on girls and women has led to many documented instances of abuse, not only in China but also in other developing countries, such as India. Abuse of women and girls is a serious problem that is not easily resolved because it would require major cultural change.

How will China manage its population growth in the future? (pages 46–48)

G. Have students read this section, which introduces the population pyramid shown in Figure 11 (page 47). Be sure students understand how to read this graph; ask them to estmate how many millions of people there are in different age groups as a quick check of understanding. For example, to follow up on the previous section, have students compare the number of males and females under age 5. [In 1990, there were about 61 million boys but only 55 million girls in China.] Have students work in pairs or small groups to answer Questions 15–17 on page 48.

    Younger students may have more difficulty with the concept of using population pyramids to project future populations. Sketch for them on the chalkboard how the bulge in the pyramid (from about ages 16–20 to 26–30) will move upward in the future as that generation ages.



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Population Growth 47

One way to predict the number of women who might bear children is by using a graph known as a *population pyramid* (Figure 11 below). In a population pyramid, the total population is divided by sex and by age group. This makes it possible to quickly estimate how many women will be entering their childbearing years (ages 15 to 49) at any point in the future.

Figure 11 Population pyramid, showing China's population by age and sex, 1990.

Source: Yuan Tien et al. 1992.

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48 *Geographic Inquiry into Global Issues*

China's government continues to modify its population-management strategy. The goal is to address the reasons why people have many children. Do you think the plan outlined in the following quote might be effective? Why or why not?

The government . . . is now putting more emphasis on elevating the status of women, providing old-age security, and improving family planning and maternal-child health services (World Resources Institute 1994, page 62).

Questions and Answers for page 48

15. About how many Chinese women were in their childbearing years in 1990?

    - Here students will need to estimate the total female population for the age groups from 16–20 to 46–50. (This is a close enough match to the definition for childbearing ages, 15–49, given the way the data are reported.) The total of these seven bars is approximately 320 million. Accept any answer close to this figure.

16. How many women of childbearing age will there be in the year 2000? What can you predict about birth rates in China in the near future?

    - Now students will need to estimate the total of the seven bars in the age groups that were from 6–10 to 36–40 in 1990, for these will be the women of childbearing age in the year 2000. The approximate total is 355 million.

      This increase in the number of women of childbearing age means that birth rates will rise. Remind students that birth rates are calculated as a rate per 1,000 population—so if the population of women having children goes up, so will the birth rate, assuming that fertility rates stay the same.

17. What can you predict about China's goal to keep its population around 1.2 billion by the year 2000?

    - Without studying census data and learning formulas for population projections, students cannot offer specific answers to this question. However, it is more important that they identify trends. Looking again at the bulge in the population pyramid, which shows that large numbers of women will be in their childbearing years for another 15–20 years, students can conclude that it will be almost impossible for China to achieve its goal. This is why China enacted strong laws to lower its fertility rate. Students may recognize that China can begin to reduce its growth only after the bulge of the pyramid passes through the childbearing years.

      Students can visualize the forecasts they made if they redraw the population pyramid as they predict it will look in 10 years and again in 20 years. They will see that the bulge moves up, and eventually those women move out of their childbearing years. Ask students to consider what the new bars on the lower end would look like. The point is that even though the younger women entering childbearing years may be reducing their fertility rate, their larger numbers will result in another bulge in the population at the age of their children.

H. Close the lesson by having students read the quote from the World Resources Institute on page 48. Discuss why improving the status of women, providing old-age security, and improving family-planning and health-care services could help achieve the one-child family.

For Further Inquiry

As an assessment, have students assemble a newsletter (using computer software if available) summarizing the population-management issue in China. Articles that students could write include: (a) why the availability of environmental resources plays a role in determining whether a country is overpopulated or not; (b) an explanation of the roles of women and children in developing societies and how changes in these roles are critical parts of population management; (c) a description of how China's One-Child Policy attempted to address traditional reasons for having a large family; and (d) a list of conditions that the students agree are acceptable or unacceptable as part of a policy for population-growth management. Encourage students to write poems and draw cartoons, graphics, and maps to illustrate the issue. Publish the newsletter and distribute it to the rest of the school.

Lesson 6

What is Kenya doing about its population-growth problem?

Time Required

One or two 50-minute class periods

Materials Needed

Transparency of Overhead 2 (from Lesson 2)
Copies of Handout 1 for each group of students (optional; see Procedure D)

Glossary Words

birth rate

death rate

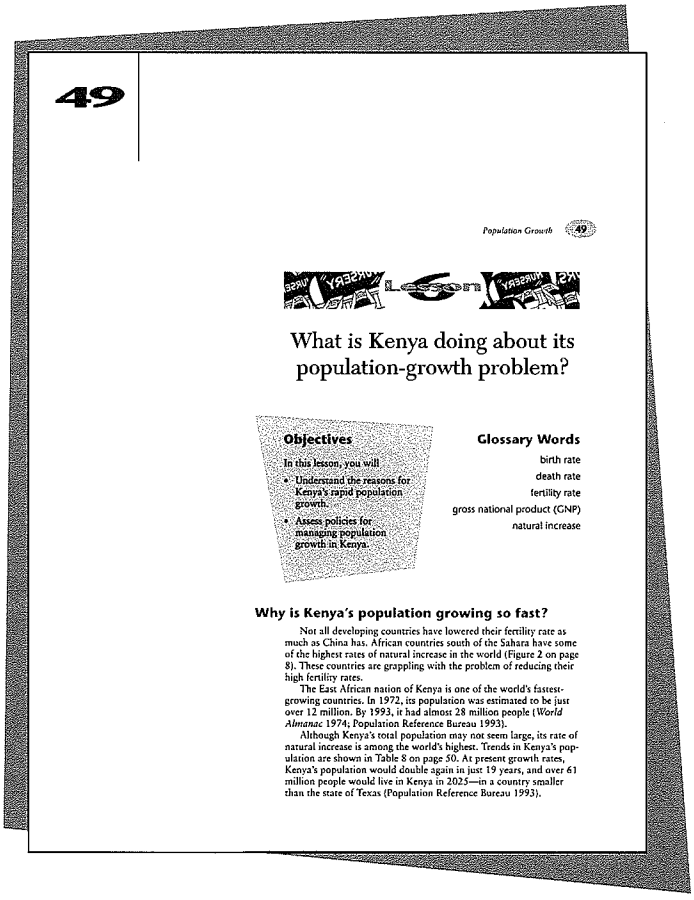
fertility rate

gross national product (GNP)

natural increase

Getting Started

This lesson shifts to a brief comparative case study of population management in Kenya. Have students locate Kenya on a world map before beginning. Ask students for their preconceptions of how they think Kenya's population problem would be similar to and different from China's. [Although Kenya and China are very different in terms of size, culture, population, and economic possibilities, they are similar in one key aspect: Both are developing countries struggling with population growth. In Kenya's case the rate of natural increase is very high, while in China's case the problem is related more to its high absolute growth.]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Population Growth 49

Lesson 6

What is Kenya doing about its population-growth problem?

Objectives

In this lesson, you will

- Understand the reasons for Kenya's rapid population growth.
- Assess policies for managing population growth in Kenya.

Glossary Words

birth rate
death rate
fertility rate
gross national product (GNP)
natural increase

Why is Kenya's population growing so fast?

Not all developing countries have lowered their fertility rate as much as China has. African countries south of the Sahara have some of the highest rates of natural increase in the world (Figure 2 on page 8). These countries are grappling with the problem of reducing their high fertility rates.

The East African nation of Kenya is one of the world's fastest-growing countries. In 1972, its population was estimated to be just over 12 million. By 1993, it had almost 28 million people (*World Almanac* 1974; Population Reference Bureau 1993).

Although Kenya's total population may not seem large, its rate of natural increase is among the world's highest. Trends in Kenya's population are shown in Table 8 on page 50. At present growth rates, Kenya's population would double again in just 19 years, and over 61 million people would live in Kenya in 2025—in a country smaller than the state of Texas (Population Reference Bureau 1993).

Procedures

Why is Kenya's population growing so fast? (pages 49–51)

A. Have students read the introductory text, which examines Kenya's rapid population growth, and study Table 8 before answering Questions 1 and 2 on page 50. You may wish to review Figure 3, the Demographic Transition model on page 15, before discussing Question 2 (or use **Overhead 2** for this purpose).

B. Have students read the quote on pages 50–51, which describes why women in Kenya traditionally have had a lot of children. Ask students how this situation is similar to that of women in China. [Students may note that children are considered a sign of wealth and that they are needed to work to help the family earn money. Also note that education and opportunities other than being a childbearer were traditionally denied to women in both countries.]

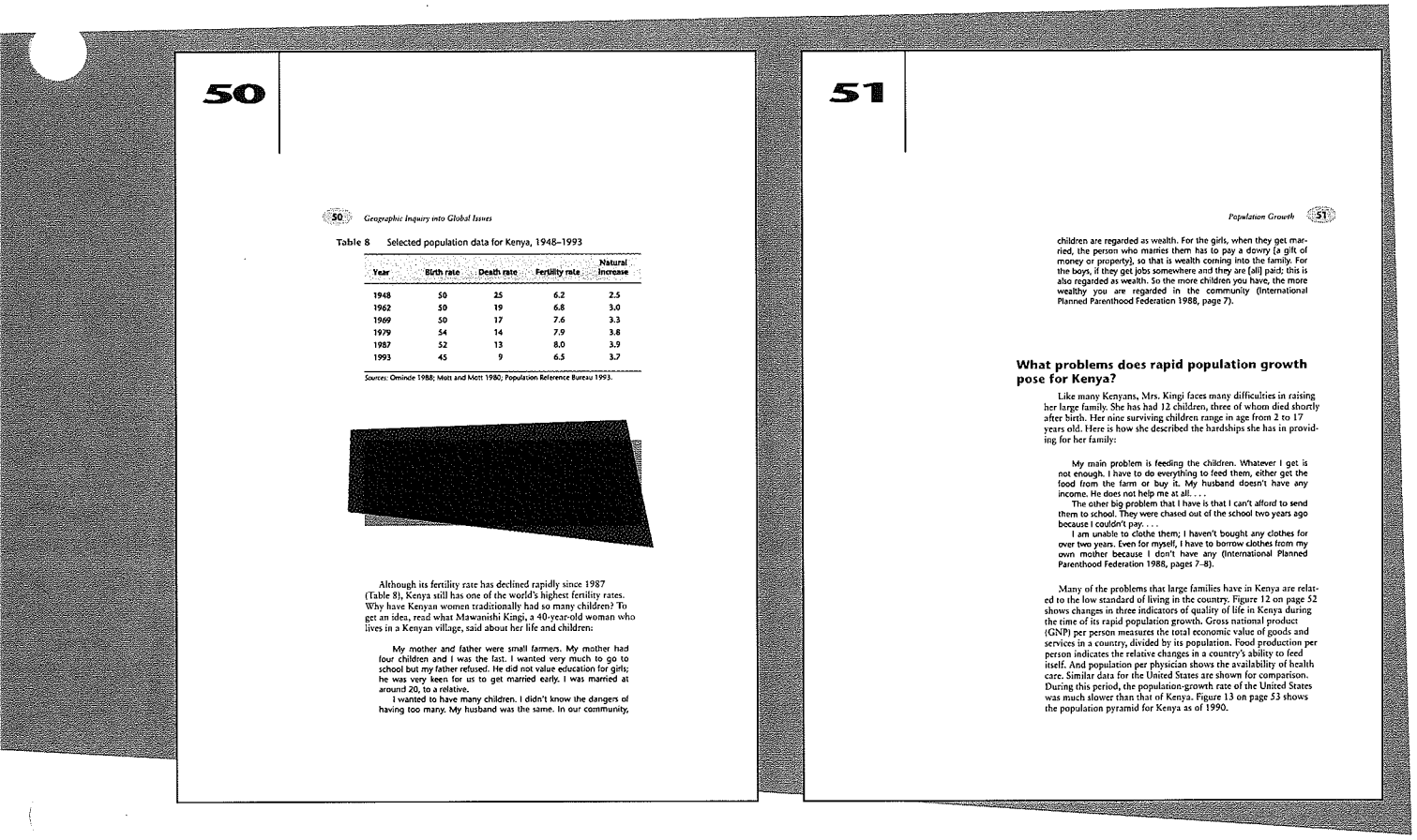

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Table 8 Selected population data for Kenya, 1948–1993

Year	Birth rate	Death rate	Fertility rate	Natural increase
1948	50	25	6.2	2.5
1962	50	19	6.8	3.0
1969	50	17	7.6	3.3
1979	54	14	7.9	3.8
1987	52	13	8.0	3.9
1993	45	9	6.5	3.7

Sources: Ominde 1988; Mott and Mott 1980; Population Reference Bureau 1993.

Although its fertility rate has declined rapidly since 1987 (Table 8), Kenya still has one of the world's highest fertility rates. Why have Kenyan women traditionally had so many children? To get an idea, read what Mawanishi Kingi, a 40-year-old woman who lives in a Kenyan village, said about her life and children:

> My mother and father were small farmers. My mother had four children and I was the last. I wanted very much to go to school but my father refused. He did not value education for girls; he was very keen for us to get married early. I was married at around 20, to a relative.
>
> I wanted to have many children. I didn't know the dangers of having too many. My husband was the same. In our community,

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> children are regarded as wealth. For the girls, when they get married, the person who marries them has to pay a dowry (a gift of money or property), so that is wealth coming into the family. For the boys, if they get jobs somewhere and they are [all] paid; this is also regarded as wealth. So the more children you have, the more wealthy you are regarded in the community (International Planned Parenthood Federation 1988, page 7).

What problems does rapid population growth pose for Kenya?

Like many Kenyans, Mrs. Kingi faces many difficulties in raising her large family. She has had 12 children, three of whom died shortly after birth. Her nine surviving children range in age from 2 to 17 years old. Here is how she described the hardships she has in providing for her family:

> My main problem is feeding the children. Whatever I get is not enough. I have to do everything to feed them, either get the food from the farm or buy it. My husband doesn't have any income. He does not help me at all. . . .
>
> The other big problem that I have is that I can't afford to send them to school. They were chased out of the school two years ago because I couldn't pay. . . .
>
> I am unable to clothe them; I haven't bought any clothes for over two years. Even for myself, I have to borrow clothes from my own mother because I don't have any (International Planned Parenthood Federation 1988, pages 7–8).

Many of the problems that large families have in Kenya are related to the low standard of living in the country. Figure 12 on page 52 shows changes in three indicators of quality of life in Kenya during the time of its rapid population growth. Gross national product (GNP) per person measures the total economic value of goods and services in a country, divided by its population. Food production per person indicates the relative changes in a country's ability to feed itself. And population per physician shows the availability of health care. Similar data for the United States are shown for comparison. During this period, the population-growth rate of the United States was much slower than that of Kenya. Figure 13 on page 53 shows the population pyramid for Kenya as of 1990.

Questions and Answers for page 50

1. China's rate of natural increase in 1993 was 1.2 percent. What factor shown in Table 8 explains why Kenya's rate was so much higher?
   - The key difference is Kenya's much higher birth rate and fertility rate.

2. At what stage of the Demographic Transition model is Kenya?
   - Unlike China, which is well on its way to Stage 3, Kenya is still in the early phases of Stage 2 (very high birth rates after death rates have dropped).

What problems does rapid population growth pose for Kenya? (pages 51–54)

C. Put students into groups of three or four and have them brainstorm a list of problems that Kenya probably faces because of its very rapid population growth. [Based on earlier lessons, they may be able to identify up to three problem areas: (a) agricultural land may be overworked and become less productive; (b) the need for jobs will increase; and (c) government ability to provide basic services for education, health, water, and housing will be strained.]

The quote from the Kenyan woman (Mrs. Kingi) on page 51 can give students ideas about how the problems of large families affect individual families in developing countries. Use Figures 12 and 13 on pages 52–53 and Questions 3–5 on page 54 to focus discussion on the problems related to very rapid population growth in Kenya.

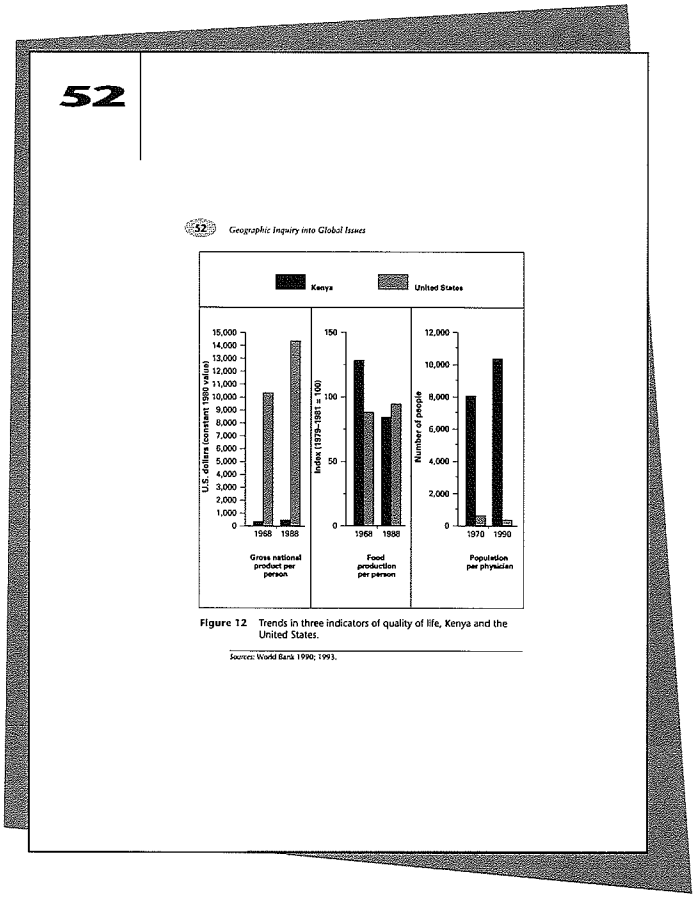

Figure 12 Trends in three indicators of quality of life, Kenya and the United States.
Sources: World Bank 1990; 1993.

Questions and Answers for page 54

3. How do the trends in the three indicators shown in Figure 12 compare for Kenya and the United States?

   - While per person GNP has increased in the United States, Kenya's has been stagnant. Kenya's food production per person has declined, indicating a loss of self-sufficiency, while U.S. farmers have increased food production. Finally, the big rise in the population per physician in Kenya points to the decreasing accessibility of health care. The number of U.S. physicians has kept pace with population growth.

4. How does the shape of Kenya's population pyramid (Figure 13) differ from China's (Figure 11)?

   - China's pyramid had a bulge in the age groups already in their childbearing years and lower populations in the youngest ages. By contrast, the "double-J" shape of Kenya's pyramid (characteristic of rapidly growing countries) shows that a much larger percentage of the total population is under age 15.

     To underscore this point, have students estimate the proportion of Kenya's population under age 15. [About 50 percent of Kenya's population is under age 15. For comparison, only about 22 and 28 percent of the U.S. and Chinese populations, respectively, are under 15.]

continued

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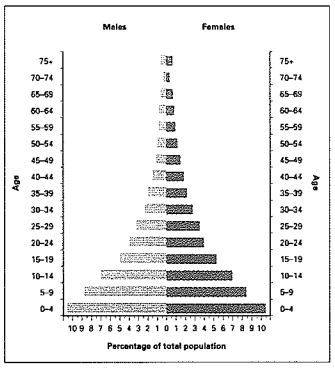

Figure 13 Population pyramid for Kenya, 1990.

Source: Crews and Cancellier 1991.

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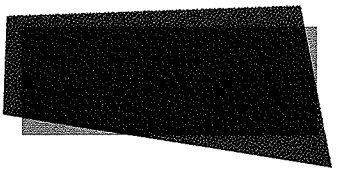


What is Kenya's population-management policy?

In 1967, Kenya became the first African country south of the Sahara to adopt an official national family-planning program. The program called for two kinds of services: (1) family planning services and (2) maternal and child health services.

Family planning services emphasized education about contraception, family size, and spacing of children. In addition, contraceptive devices were made available on request. *Maternal and child health services* were meant to provide better health care to improve the survival of children and of women in childbirth. All of these services were voluntary. Individual and ethnic customs were fully respected (World Bank 1983).

The following extracts indicate that these programs appear to be working. The reason that Kenya's fertility rate has declined is partly because people's attitudes toward large families are gradually changing. Kenya now has cause to be optimistic about managing its population growth. The following quote is from Mrs. Kingi again, who at this time was using birth control to avoid having any more children:

> The first time that I heard about family planning was in the clinic. When we take the children for immunization or for child welfare, we are educated in family planning. . . .
>
> If I knew earlier, I would have started using family planning, but I didn't know. I thought having more children was the best thing. I didn't know that I was ruining my health and giving myself more problems.
>
> My husband also didn't like family planning at the beginning. He valued having many children, but now he realizes that it's important to plan the family so that we can be able to care for the children that we have (International Planned Parenthood Federation 1988, pages 16–17).

5. What do Figures 12 and 13 indicate about the importance and future of managing population growth in Kenya?

   - All three of the indicators in Figure 12 suggest how difficult it is for Kenya to make any headway in improving the quality of life of its citizens in the face of rapid population growth.

     Where China can hope for a leveling-off of population growth as the bulge in its pyramid passes through childbearing years, the ever-widening pyramid of Kenya reveals a common problem in developing countries. With a huge proportion of their population under age 15, they can anticipate continued population growth for many years to come as these children enter their own childbearing years.

     Also, having a large percentage of the population under age 15 means that people in their productive years (roughly from ages 15 to 55) have a huge number of children dependent on them for support.

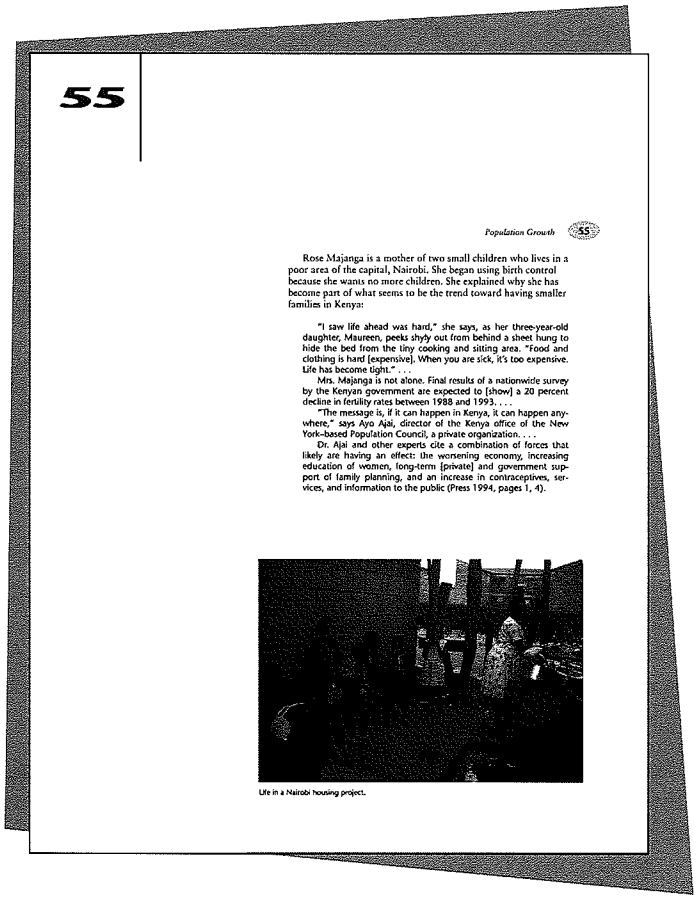
What is Kenya's population-management policy? (pages 54–55)

D. At this point, you may choose to have students simply read about the programs of family planning that Kenya has tried. The brief stories that conclude the lesson suggest that the programs are meeting with some success.

E. Alternatively, you may wish to engage students in a brief role-playing simulation, which may take another day of class time.

Tell students that they will assume the role of population advisers for Kenya's government. It is their task to analyze plans to solve the population problem.

Divide the class into groups of five and have each person take one of the roles described in Handout 1: (1) demographer, (2) minister of agriculture, (3) minister of education, (4) minister of social services, and (5) minister of finance. Give students 15 minutes to analyze the programs in the table on page 1 of Handout 1 and to decide how they will advise the government. In the exercise, they are given only $3.5 million to work with and must decide how to allocate these funds.



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Rose Majanga is a mother of two small children who lives in a poor area of the capital, Nairobi. She began using birth control because she wants no more children. She explained why she has become part of what seems to be the trend toward having smaller families in Kenya:

"I saw life ahead was hard," she says, as her three-year-old daughter, Maureen, peeks shyly out from behind a sheet hung to hide the bed from the tiny cooking and sitting area. "Food and clothing is hard [expensive]. When you are sick, it's too expensive. Life has become tight." . . .

Mrs. Majanga is not alone. Final results of a nationwide survey by the Kenyan government are expected to [show] a 20 percent decline in fertility rates between 1988 and 1993. . . .

"The message is, if it can happen in Kenya, it can happen anywhere," says Ayo Ajai, director of the Kenya office of the New York–based Population Council, a private organization. . . .

Dr. Ajai and other experts cite a combination of forces that likely are having an effect: the worsening economy, increasing education of women, long-term [private] and government support of family planning, and an increase in contraceptives, services, and information to the public (Press 1994, pages 1, 4).

Life in a Nairobi housing project.

Have each group present their decisions to the class. Once the groups have reported, lead discussion about the difficulties they had in making decisions. Have students assess the likely effectiveness of each groups' decisions on lowering Kenya's population-growth rate.

Evaluate group plans on how well students provided both immediate practical services (such as health care) and long-term efforts at modifying cultural traditions that lead to the desire for large families (e.g., improving educational opportunities for both women and men; introducing agricultural practices that rely less on children for labor; providing old-age security; and, maybe most important, addressing the status of women, which traditionally put emphasis on fertility as a measure of worth).

For Further Inquiry

Have students conduct a library search for data to compare Kenya's population growth to other countries. Have students do comparative studies of developing countries that have moved into Demographic Transition Stage 3 (e.g., Thailand and Brazil). They could inquire how those countries differ from Kenya and see if the data provide ideas for population management in Kenya.

Lesson 7

How does the United States manage its population growth?

Time Required

Two 50-minute class periods

Glossary Words

immigration

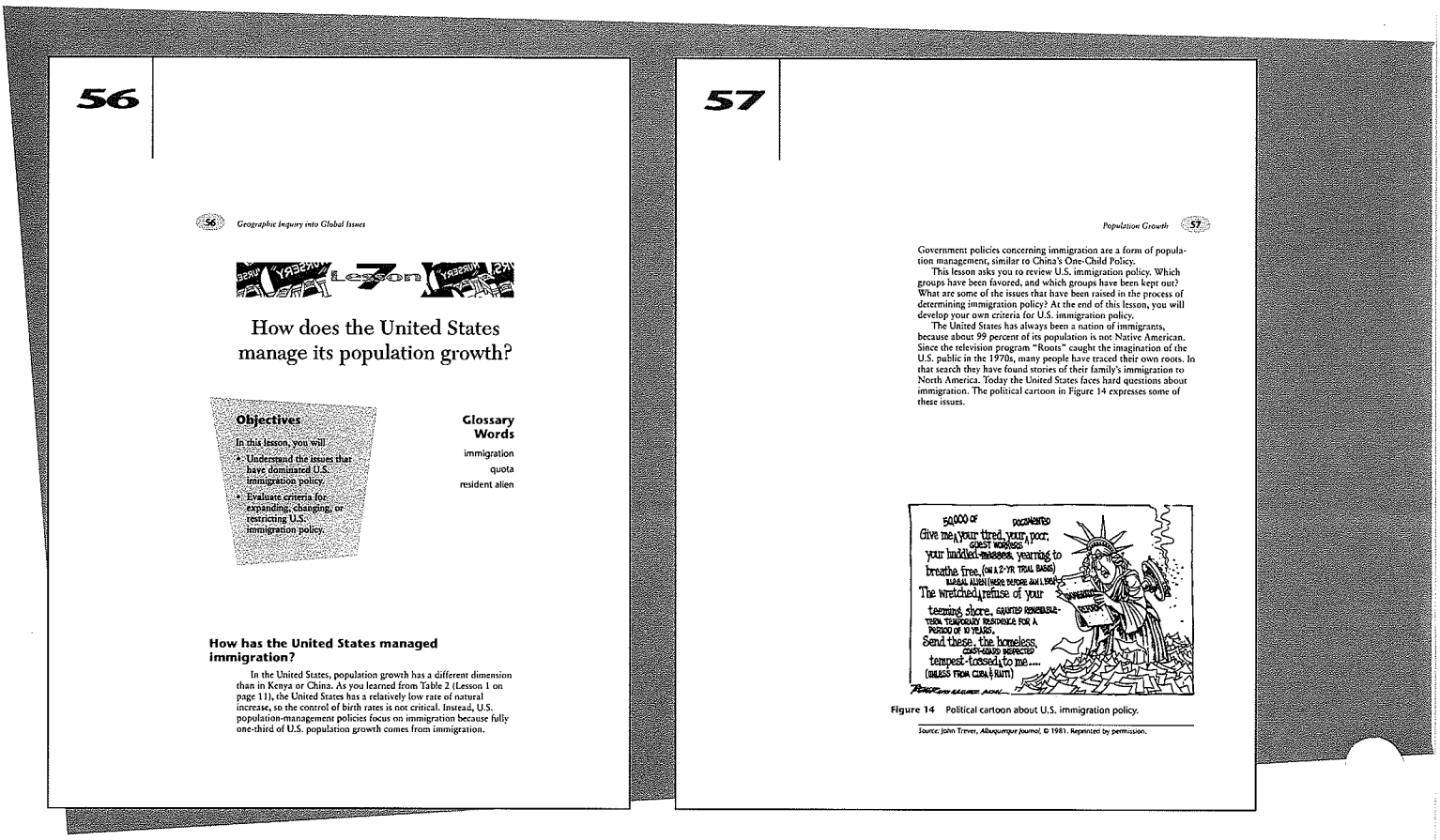
quota

resident alien

Materials Needed

Transparency of Overhead 6

Copies of Activity 5 for each group of students



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Lesson 7

How does the United States manage its population growth?

Objectives

In this lesson, you will

- Understand the issues that have dominated U.S. immigration policy.
- Evaluate criteria for expanding, changing, or restricting U.S. immigration policy.

Glossary Words

immigration

quota

resident alien

How has the United States managed immigration?

In the United States, population growth has a different dimension than in Kenya or China. As you learned from Table 2 (Lesson 1 on page 11), the United States has a relatively low rate of natural increase, so the control of birth rates is not critical. Instead, U.S. population-management policies focus on immigration because fully one-third of U.S. population growth comes from immigration.

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Population Growth 57

Government policies concerning immigration are a form of population management, similar to China's One-Child Policy.

This lesson asks you to review U.S. immigration policy. Which groups have been favored, and which groups have been kept out? What are some of the issues that have been raised in the process of determining immigration policy? At the end of this lesson, you will develop your own criteria for U.S. immigration policy.

The United States has always been a nation of immigrants, because about 99 percent of its population is not Native American. Since the television program "Roots" caught the imagination of the U.S. public in the 1970s, many people have traced their own roots. In that search they have found stories of their family's immigration to North America. Today the United States faces hard questions about immigration. The political cartoon in Figure 14 expresses some of these issues.

Figure 14 Political cartoon about U.S. immigration policy.

Source: John Trever, *Albuquerque Journal*, © 1981. Reprinted by permission.

Getting Started

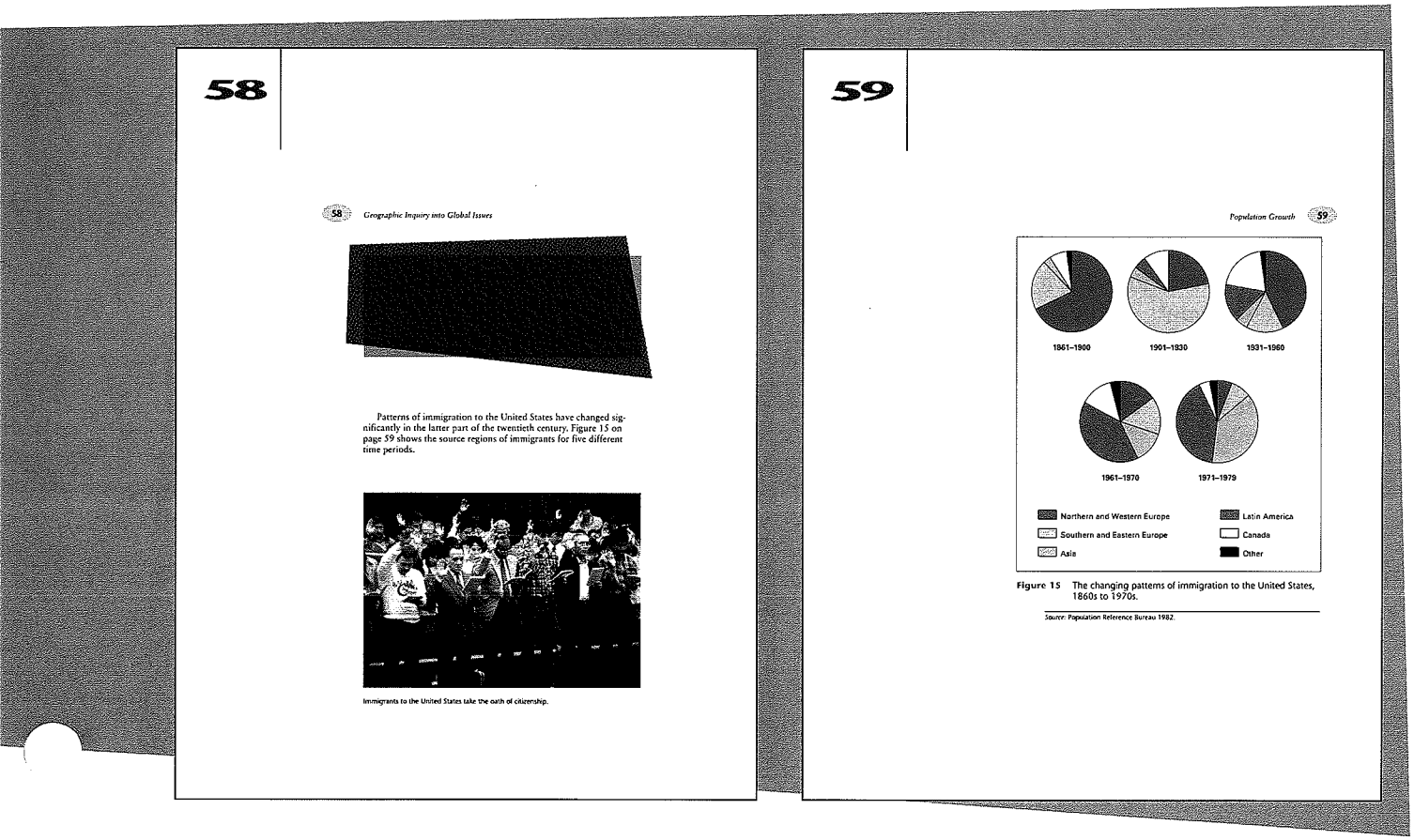
Students may be unfamiliar with the Emma Lazarus sonnet engraved inside the pedestal of the Statue of Liberty. Show them **Overhead 6** and review the symbolism of the Statue of Liberty. You may also wish to include some history about the statue or assign students to look up its history and have them present their findings to the class.

Procedures

How has the United States managed immigration? (pages 56–61)

A. Have students read the introductory section, which notes the reason why U.S. population-management policies focus on immigration rather than on controlling natural increase.

You may wish to review Table 2 (Lesson 1 on page 11) to remind students that the United States has a relatively low rate of natural increase, so the control of birth rates is not critical. Have students examine the political cartoon of the Statue of Liberty (Figure 14 on page 57). Questions 1–3 on page 58 may help stimulate discussion.



Questions and Answers for page 58

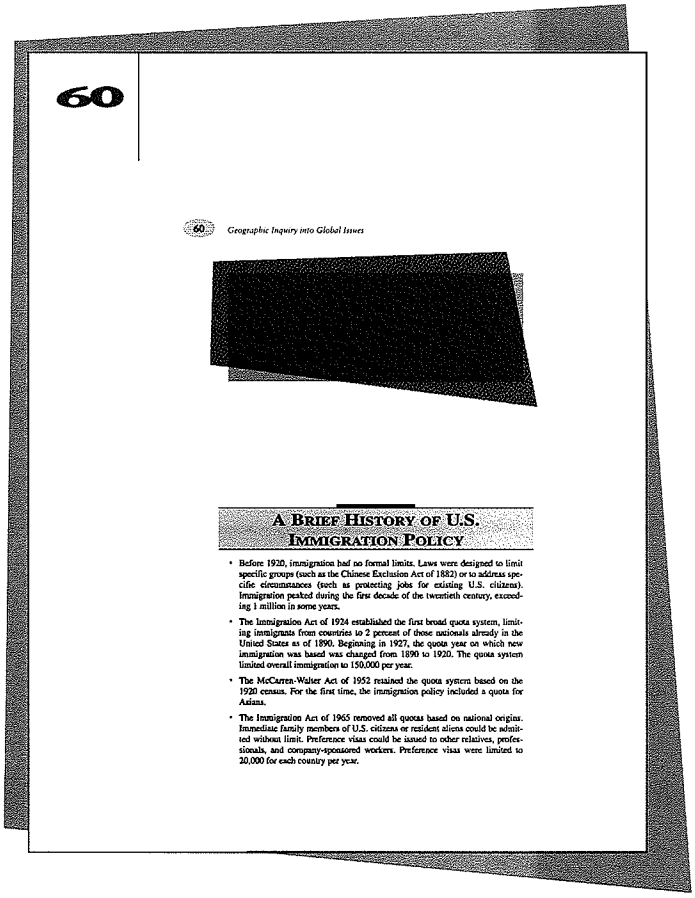
1. What is the artist trying to say about current U.S. views on immigration?
   - Although students may have various interpretations of this cartoon depending on their ability to recognize the issues involved, it would seem the artist is depicting a confused and tired Liberty struggling to rewrite the original poem on her tablet to reflect ongoing changes in U.S. immigration policy. The pile of pages at her feet indicates that she has already scrapped numerous versions of these policies.

2. How have immigrants defined U.S. culture?
   - This question is meant to stimulate discussion of the wide range of contributions that different immigrant groups have made to the United States. Encourage students to consider the contributions made by as many different groups as possible, including the African "immigrants" who were brought to North America forcibly. You may wish to ask whether Native Americans have had a defining role in the history of U.S. culture. They have not, and you may wish to encourage student comments on this fact.

3. Do you think people in the United States still believe in the ideals expressed by the Statue of Liberty? Why or why not?
   - Encourage students to express their own opinions on this question.

B. Divide the class into small groups to study Figure 15 on page 59 and reply to Questions 4–6 on page 60.

Younger students may not be familiar with the historical events that triggered the changes in immigration patterns shown in Figure 15. If time allows, discuss these events if this helps them appreciate the significance of these changes, especially in terms of the often-negative attitudes U.S. citizens held toward new immigrants.


60

60 Geographic Inquiry into Global Issues

A Brief History of U.S. Immigration Policy

- Before 1920, immigration had no formal limits. Laws were designed to limit specific groups (such as the Chinese Exclusion Act of 1882) or to address specific circumstances (such as protecting jobs for existing U.S. citizens). Immigration peaked during the first decade of the twentieth century, exceeding 1 million in some years.
- The Immigration Act of 1924 established the first broad quota system, limiting immigrants from countries to 2 percent of those nationals already in the United States as of 1890. Beginning in 1927, the quota year on which new immigration was based was changed from 1890 to 1920. The quota system limited overall immigration to 150,000 per year.
- The McCarren-Walter Act of 1952 retained the quota system based on the 1920 census. For the first time, the immigration policy included a quota for Asians.
- The Immigration Act of 1965 removed all quotas based on national origins. Immediate family members of U.S. citizens or resident aliens could be admitted without limit. Preference visas could be issued to other relatives, professionals, and company-sponsored workers. Preference visas were limited to 20,000 for each country per year.

Questions and Answers for page 60

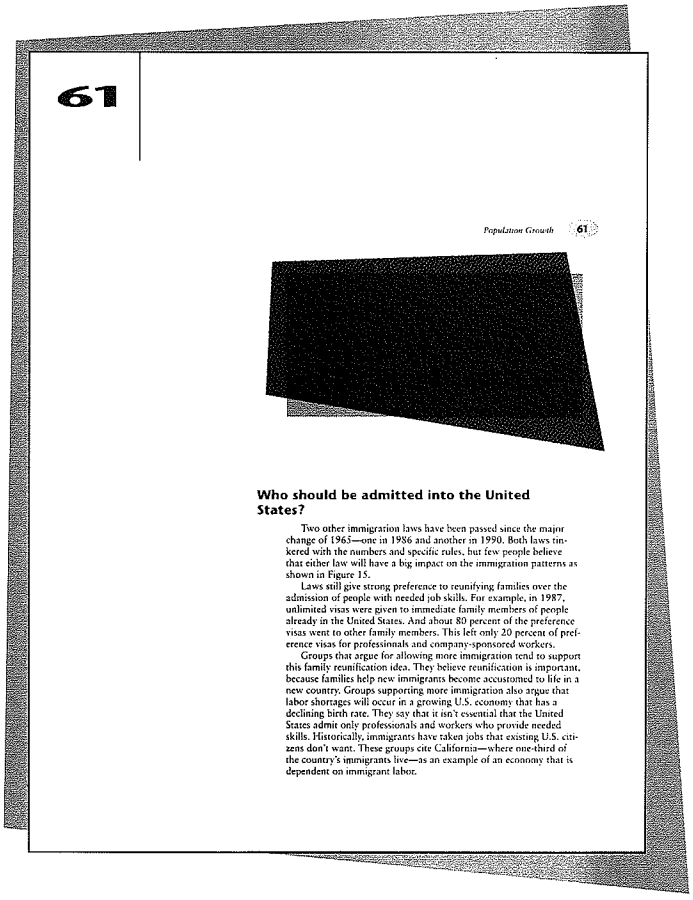
4. What changes occurred in patterns of U.S. immigration between the late nineteenth century and the 1970s?
   - In the late 1800s, most immigrants were from Northern and Western Europe. By the turn of the century, the dominant immigrant groups were from Southern and Eastern Europe. Immigration from Latin America increased throughout the first half of the twentieth century. By the 1970s, most immigrants were from Asia and Latin America, with the number of European immigrants much reduced.

5. How have these changes affected the nature of U.S. society?
   - Students can identify that the significant increase in immigration from Asia and Latin America has resulted in an increasing influence of these cultures in U.S. society. Encourage students to list some of these influences (e.g., music, food, language, ethnic neighborhoods, etc.).

     More generally, the point of this question is for students to recognize that changing patterns of immigration have led to the development of the present multicultural society of the United States.

6. Do you think these changes have affected U.S. immigration policy? Explain.
   - Students can speculate on this question, for which more details are given in the next section.

C. Have groups continue by reading "A Brief History of U.S. Immigration Policy" (page 60) and answering Questions 7–9 on page 61. As these questions call for speculation based on some previous knowledge, it may be best to discuss them with the class as a whole. These questions bring up the racist elements of historical immigration policies, and this issue must be handled sensitively.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Population Growth 61

Who should be admitted into the United States?

Two other immigration laws have been passed since the major change of 1965—one in 1986 and another in 1990. Both laws tinkered with the numbers and specific rules, but few people believe that either law will have a big impact on the immigration patterns as shown in Figure 15.

Laws still give strong preference to reunifying families over the admission of people with needed job skills. For example, in 1987, unlimited visas were given to immediate family members of people already in the United States. And about 80 percent of the preference visas went to other family members. This left only 20 percent of preference visas for professionals and company-sponsored workers.

Groups that argue for allowing more immigration tend to support this family reunification idea. They believe reunification is important, because families help new immigrants become accustomed to life in a new country. Groups supporting more immigration also argue that labor shortages will occur in a growing U.S. economy that has a declining birth rate. They say that it isn't essential that the United States admit only professionals and workers who provide needed skills. Historically, immigrants have taken jobs that existing U.S. citizens don't want. These groups cite California—where one-third of the country's immigrants live—as an example of an economy that is dependent on immigrant labor.

Questions and Answers for page 61

7. What do you think was the purpose in 1924 of imposing a quota based on the number of people who had already come from a specific country?
   - The national-origins quota system was intended to ensure that immigration did not change the ethnic makeup of U.S. society from what it was at the time the policy was instituted. This was a means to preventing non-European groups from immigrating.

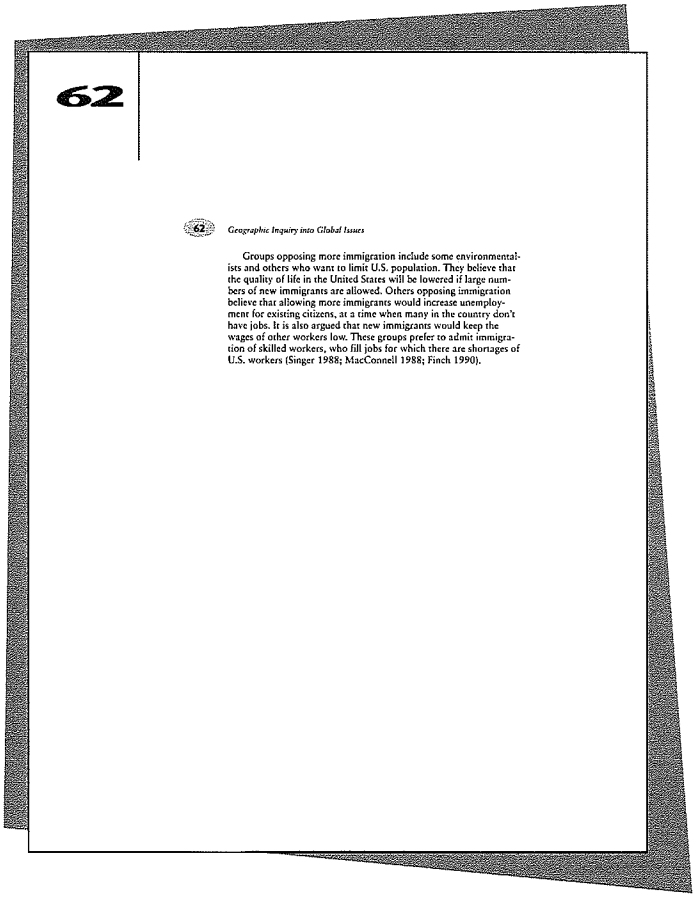
8. What countries or regions do you think would have benefited from this national-origins quota? What regions would be limited?
   - The overwhelming majority of the population prior to 1890 had come from Northern and Western Europe and the national-origins quota did not pertain to people arriving from these areas. The desire to stop the flood of immigrants from Eastern and Southern Europe in the early 1900s was the impetus for establishing this law. Note on Figure 15 that after 1930 the proportion of immigrants from Southern and Eastern Europe dropped.

9. How do you suppose immigration to the United States changed in 1965 when national quotas were essentially removed? Why?
   - Immigration from other parts of the world opened up, especially from Asia and the countries in Latin America.

Who should be admitted into the United States? (pages 61–62)

D. This section describes two reasons for expanding or limiting immigration opportunities. Have students read the text, and check their understanding of the positions presented. The basic issue is whether family members of existing immigrants, many of whom were economic or political refugees from oppression in Asia or Latin America, should be given preference over new immigrants who possess specific job skills.

Ask students to consider whether the people of the United States should permit large numbers of political or economic refugees to immigrate.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62 *Geographic Inquiry into Global Issues*

Groups opposing more immigration include some environmentalists and others who want to limit U.S. population. They believe that the quality of life in the United States will be lowered if large numbers of new immigrants are allowed. Others opposing immigration believe that allowing more immigrants would increase unemployment for existing citizens, at a time when many in the country don't have jobs. It is also argued that new immigrants would keep the wages of other workers low. These groups prefer to admit immigration of skilled workers, who fill jobs for which there are shortages of U.S. workers (Singer 1988; MacConnell 1988; Finch 1990).

E. Divide the class into groups of three or four students each. Distribute copies of **Activity 5** to each group. Ask some of the groups to play the role of policymakers and others to role-play immigrants asking for asylum in the United States. The Activity provides a list of criteria for students to examine (allow about 10 to 15 minutes for this). Define the problem by stating that not everyone who wants to come to the United States can be admitted because there are quotas.

The groups playing the policymakers will rank the criteria listed on Activity 5 according to the issues they feel are most important. Then have the groups review the cases of the hypothetical immigrants to decide who among these will be allowed to immigrate to the United States.

Groups playing immigrants seeking asylum devise explanations for why they should be allowed into the United States. Students can take on ethnic names to personalize the candidates. Each immigrant group will then visit each of the policymaker groups to see who will allow them into the United States. Students in the immigrant groups can take turns presenting their explanations to the policymakers. The policymaker groups, in turn, will alternate processing the asylum seekers.

F. Close by asking students who they felt should be admitted and why. Have individual students rank-order the hypothetical applicants. Encourage students to express their opinions about the immigration process as a whole. Some students may criticize the process for being dehumanizing. Others may remark on its fairness.

For Further Inquiry

- Encourage students to write a letter to their Congressional representatives explaining what they think U.S. immigration priorities should be. Evaluate students on their ability to clearly state the issues involved.
- Certain ethnic groups keep data on immigration patterns into states and major cities (La Raza is an example of such an organization). Students could seek out such information to find out how immigration is influencing your community or state.

Extension Activities and Resources

1. **Related GIGI Modules**
   - The module *Population and Resources* also explores the issue of population growth in the developing world, this time with a major case study on Bangladesh. Its focus is on how rapid population growth places stress on the environment and how people in densely populated areas cope with environmental hazards.
   - *Political Change* is set in the East Asian region. The module examines how people in Hong Kong are responding to the 1997 change in government control from Britain to China.
   - Other socioeconomic problems faced by developing countries, which are exacerbated by rapid population growth, are the topics of several modules: *Hunger, Infant and Child Mortality, Urban Growth, Building New Nations,* and *Development.*
   - Global environmental issues are also linked to the issue of population growth. See the modules *Sustainable Agriculture, Waste Management,* and *Global Climate Change.*

2. **Britannica Global Geography System (BGGS)**

   BGGS provides myriad extension activities to enhance each GIGI module. For a complete description of the BGGS CD-ROM and videodiscs and how they work with the GIGI print modules, please read the BGGS Overview in the tabbed section at the beginning of this Teacher's Guide.

3. **Related Videos**
   - EBEC offers these videos about the issues and regions explored in this module: "Africa: Southern Region"; "China's Cities"; "China: Network of Communities"; "China: Portrait of the Land"; "Africa: Central and Eastern Region."

     For more information, or to place an order, call toll-free, 1-800-554-9862.

- Other related videos include: "World Population" (Zero Population Growth, Inc.); "Why Do People Live Where They Do?" (*Global Geography* series, Agency for Instructional Technology); "Living Quarters" (*Spaceship Earth* series, PBS); and "Two Mothers" (International Planned Parenthood Federation, London).

4. Data Interpretation Activity

To extend the module, you may wish to have students consider how understanding population growth and trends is useful in community planning . In the following simulation, students construct and interpret population pyramids to understand how population structure influences land-use decision making in communities. (This idea was adapted from Forbes 1975.)

Provide students with a hypothetical population structure for an imaginary town. Give students the age and sex breakdown of a town with a total population of 10,000. Arrange the data so that there is either a concentration of young people (yielding a population pyramid shaped like that of Kenya) or a concentration of older people (in such cases, the population pyramid loses its triangular shape and resembles a column).

Have students construct the population pyramid for the imaginary town from your data. Explain to the class that the town must consider whether to invest funds in a new school or in a new retirement community. Based on how you stacked the data, and on students' understanding of the population pyramid, students can debate which land use better suits the town's needs. Have students speculate what the population pyramid will look like in 20 years, given the town's present population structure. Will the town's needs remain the same?

5. Additional Activities

- Students could investigate the plight of immigrant refugees in a number of ways. One approach would be to look at refugees from a particular country and find out what conditions existed that caused them to flee. Another approach would be to have students find out how refugee camps operate and what life is like for people there. This information could be obtained from organizations such as the United Nations or Amnesty International. Many larger cities have chapters of UNICEF or UNESCO that may have information.
- Have students draw posters or create a mural on butcher paper that clearly depicts the issues examined in this module.
- Have students apply the concepts that they learned about population growth and management to a country in Latin America

and demonstrate how that country's population growth is similar or different from that of China or Kenya.

- The U.S. case study in this module focused on only one aspect of population management. Older students may wish to investigate the goals and strategies of organizations devoted to managing population growth, such as Planned Parenthood or Zero Population Growth (ZPG).

6. **Debates**
   - Today there is a fear that many countries will be trapped in Demographic Transition Stage 2. As population continues to grow rapidly, a country's chances of developing economically (and thus moving into Stage 3) dwindle. Have students debate the issues concerning this transition. *Example:* Should the United States provide more foreign economic assistance to developing countries to help them limit population growth?
   - Students may prepare and present a formal debate on the following topic: *Resolved:* Governments should be allowed to dictate the number of children allowed per family. The argument in favor might take the position that China cannot become a modern economic superpower unless drastic measures are taken to curb its population growth. Those opposed might argue that China's One-Child Policy is an intrusion on people's freedom.

7. **Outside Reading**

   Students interested in learning more about the traditional view of family in China will find a good descriptive account in the novel *The Good Earth* by Pearl S. Buck.

8. **Writing**

   Assign students to write a short story in which they describe the reactions of three different generations to government policies directed at family planning. These generations could include people the age of students, their parents' age, and their grandparents' age. Evaluation of this assignment could be based on the ability of the student to demonstrate the perspective of each generation.

9. **Additional Resources**
   - *Global Issues,* an annual publication of The Dushkin Publishing Group, Inc., Sluice Dock, Guilford, CT 06437. A collection of current articles from a variety of publications covering population and other related issues.

- The Population Reference Bureau, 1875 Connecticut Ave. NW, Suite 520, Washington, DC 20009-5278 provides much of the data in this module. If you wish to update these tables, it is useful to become a member of PRB, which costs about $30.00 annually for teachers. Members receive four copies of the *Population Bulletin* per year, with in-depth reports about population issues and trends; monthly copies of *Population Today,* with brief reports on population news; and annual editions of the World and U.S. Population Data Sheets.
- *World Resources,* a biannual publication of the Worldwatch Institute, 1776 Massachusetts Ave. NW, Washington, DC 20036. Timely articles and data tables on a variety of human-environment issues, including population growth.

Names _____

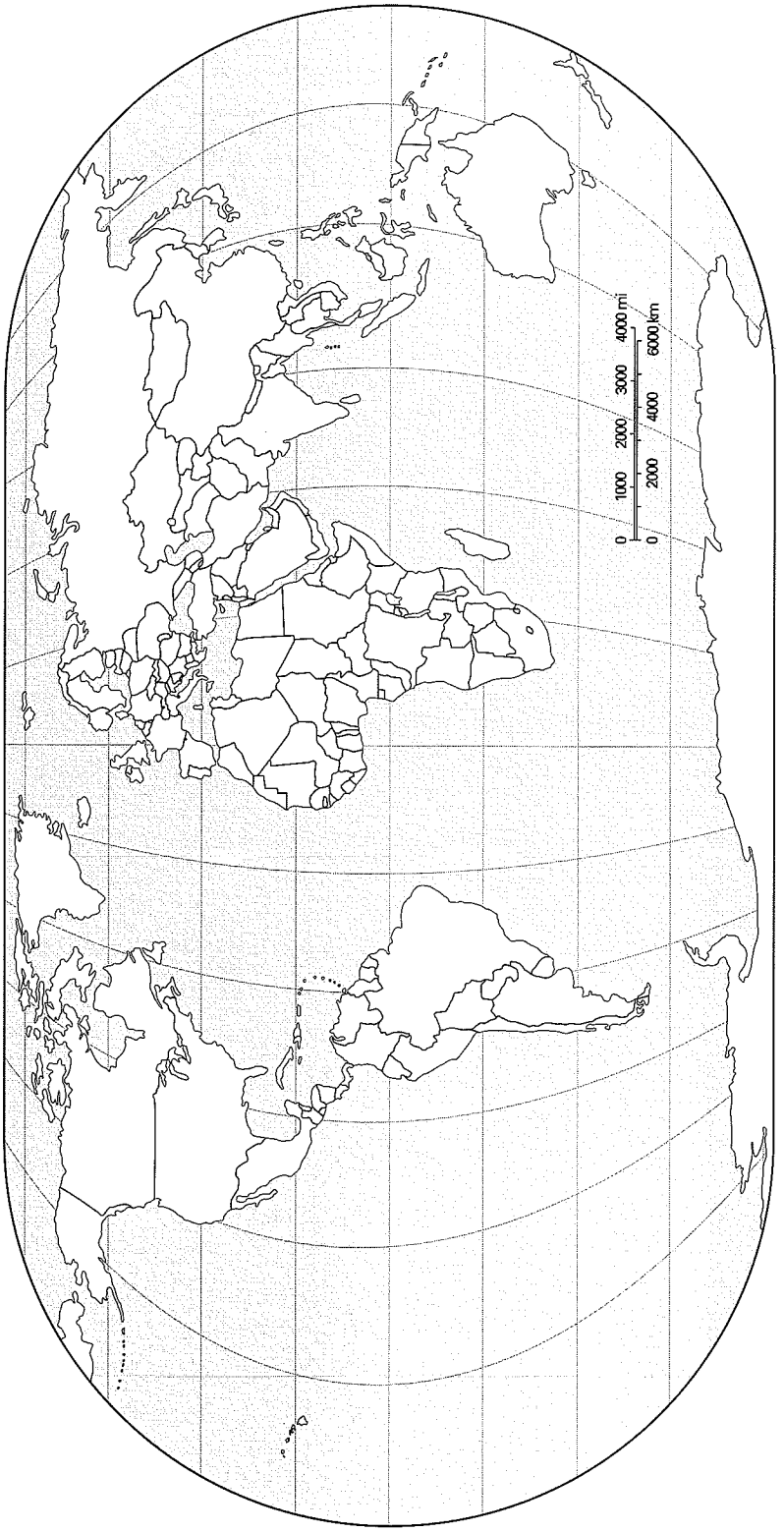
GIGI

Population Growth

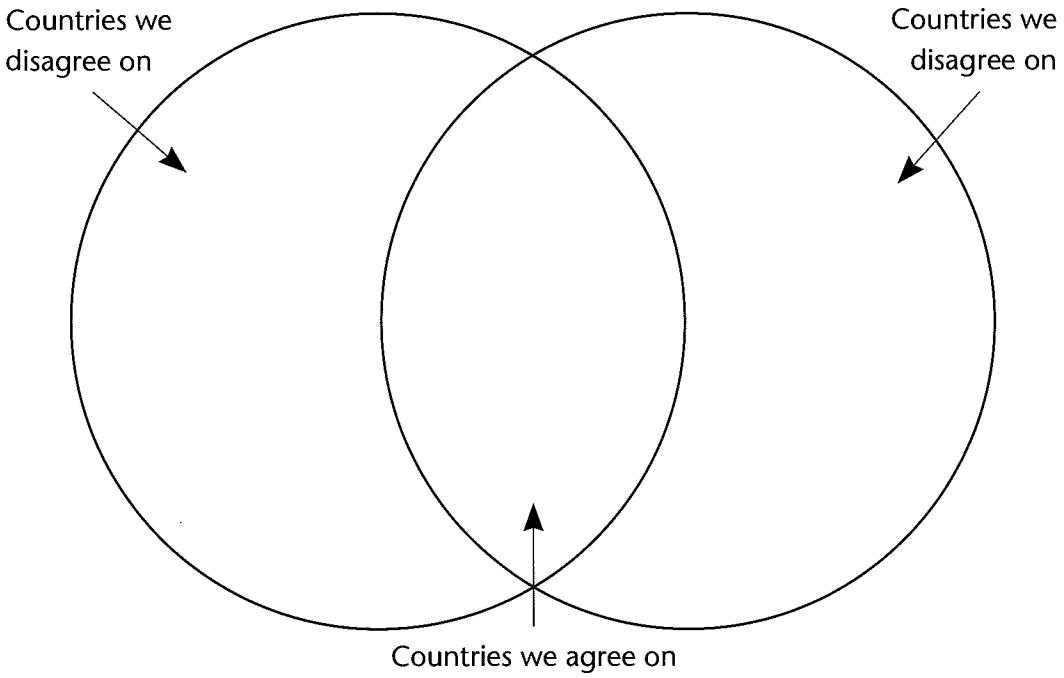
Lesson 1

World Map

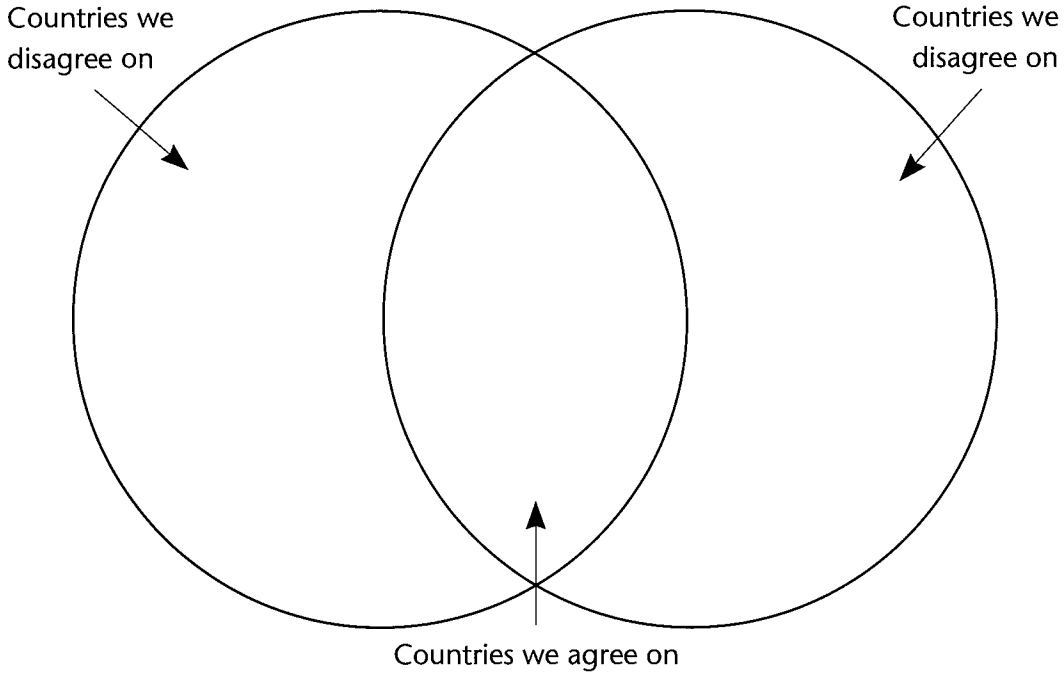
ACTIVITY 1



Six Most Populated Countries



Six Fastest-Growing Countries



Activity 2 •••

Names _____

GIGI

Population Growth

Lesson 1

Doubling Time for Two Countries

The data below are for two countries with the same population doubling times but with different levels of economic wealth, as measured by gross national product (GNP) per person (Population Reference Bureau 1993):

Country	Doubling Time (years)	Current Population (millions)	GNP per Person (U.S.$)
Saudi Arabia	22	17.5	7,070
Yemen	22	11.3	540

1. If present growth rates stay the same, in 22 years both of these countries will have twice as many people. Assuming that neither country experiences any economic growth, what will be the change in each country's GNP per person?

Country	Future Population (millions)	GNP per Person (U.S.$)
Saudi Arabia	_____	_____
Yemen	_____	_____

2. What kinds of problems will people in Yemen face when its population doubles?

_____

_____

_____

_____

3. How would the problems posed by doubling the population compare for Saudi Arabia?

_____

_____

_____

_____

_____

Doubling Time for Two Countries

1. If present growth rates stay the same, in 22 years both of these countries will have twice as many people. Assuming that neither country experiences any economic growth, what will be the change in each country's GNP per person?

Country	Future Population (millions)	GNP per Person (U.S.$)
Saudi Arabia	[35.0]	[3,535]
Yemen	[22.6]	[270]

2. What kinds of problems will people in Yemen face when its population doubles?

[Its low GNP indicates that it is a relatively poor country, which suggests it would have difficulty providing for its citizens' basic needs.]

3. How would the problems posed by doubling the population compare for Saudi Arabia?

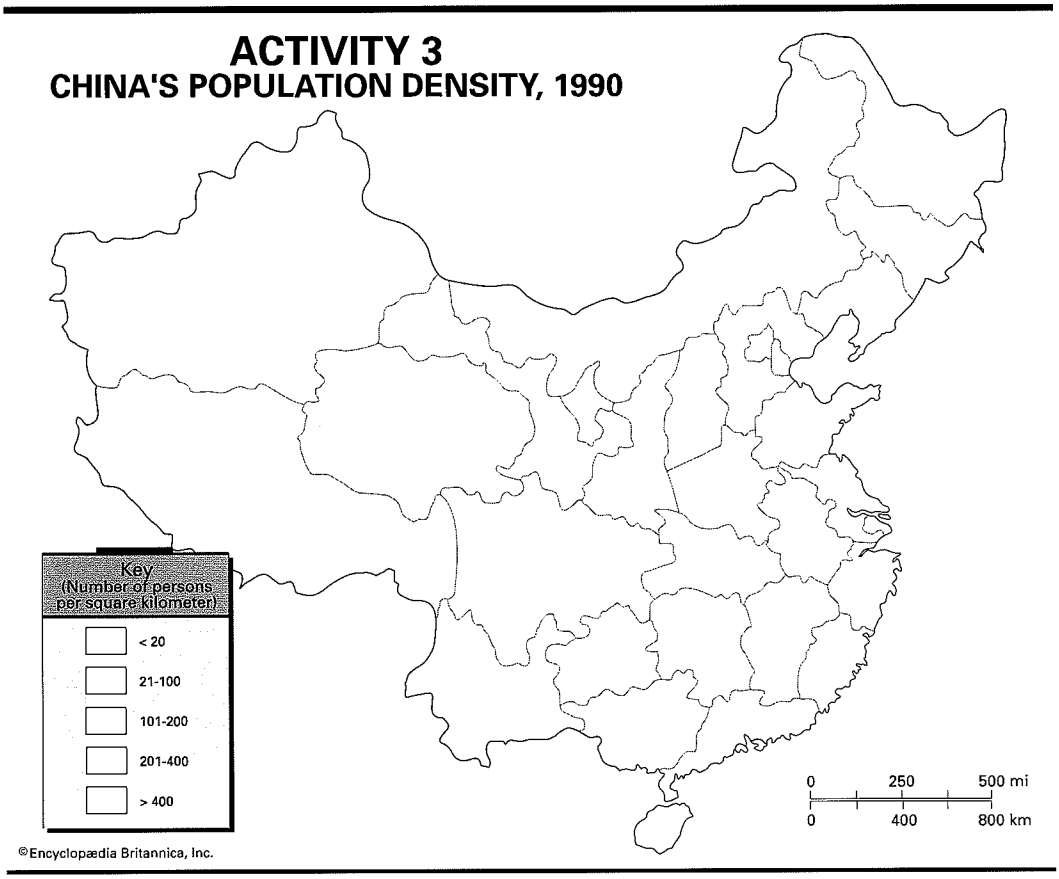
[The problems are not likely to be as severe, given that Saudi Arabia possesses greater economic resources with which to provide for its peoples' basic needs. Indeed, it is also likely to have continued economic growth, despite the assumption posed in Question 1, because it has huge reserves of a valuable resource—oil.]

Names _____

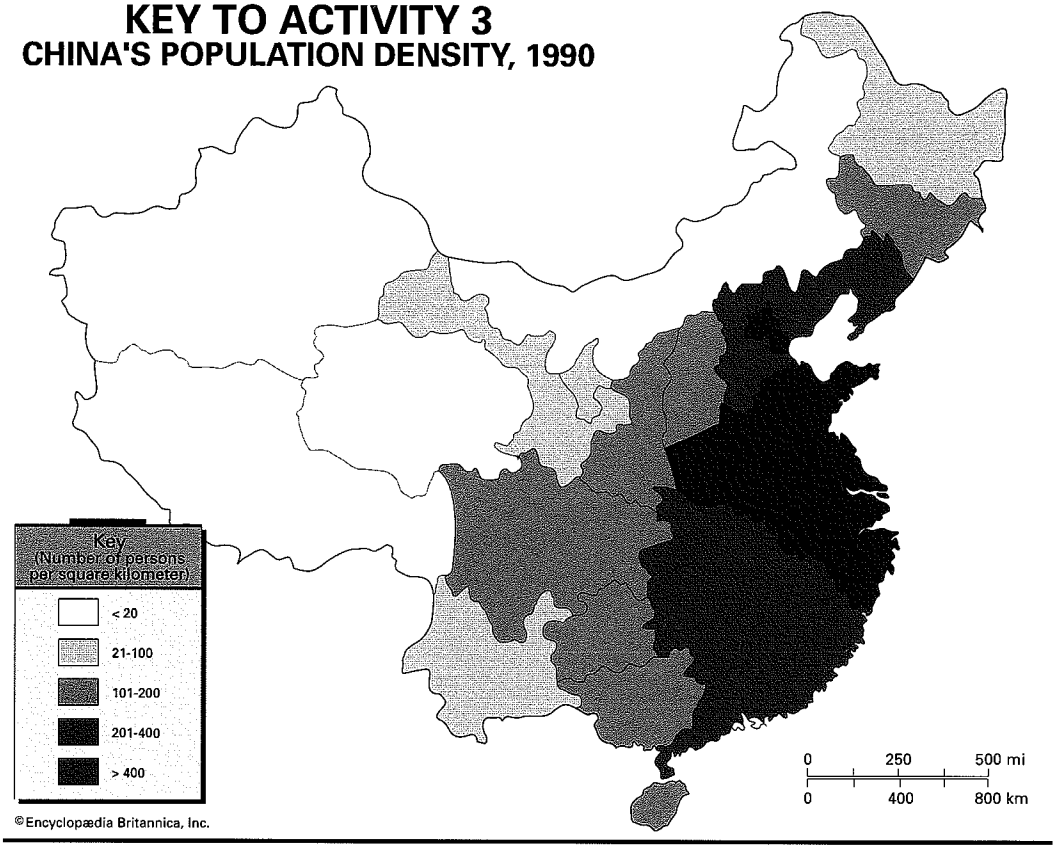
GIGI
Population Growth
Lesson 3

China's Population Density, 1990

Directions: Using this blank map and the data in Table 4 on pages 25 and 26 of the Student DataBook, make a map of China's population density. Use different colors to correspond to the five categories in this legend. Use white for the lowest population density and make the colors increasingly darker for higher population densities. Color in each province and complete the legend.



China's Population Density, 1990



Names _____

_____

GIGI

Population Growth

Lesson 5

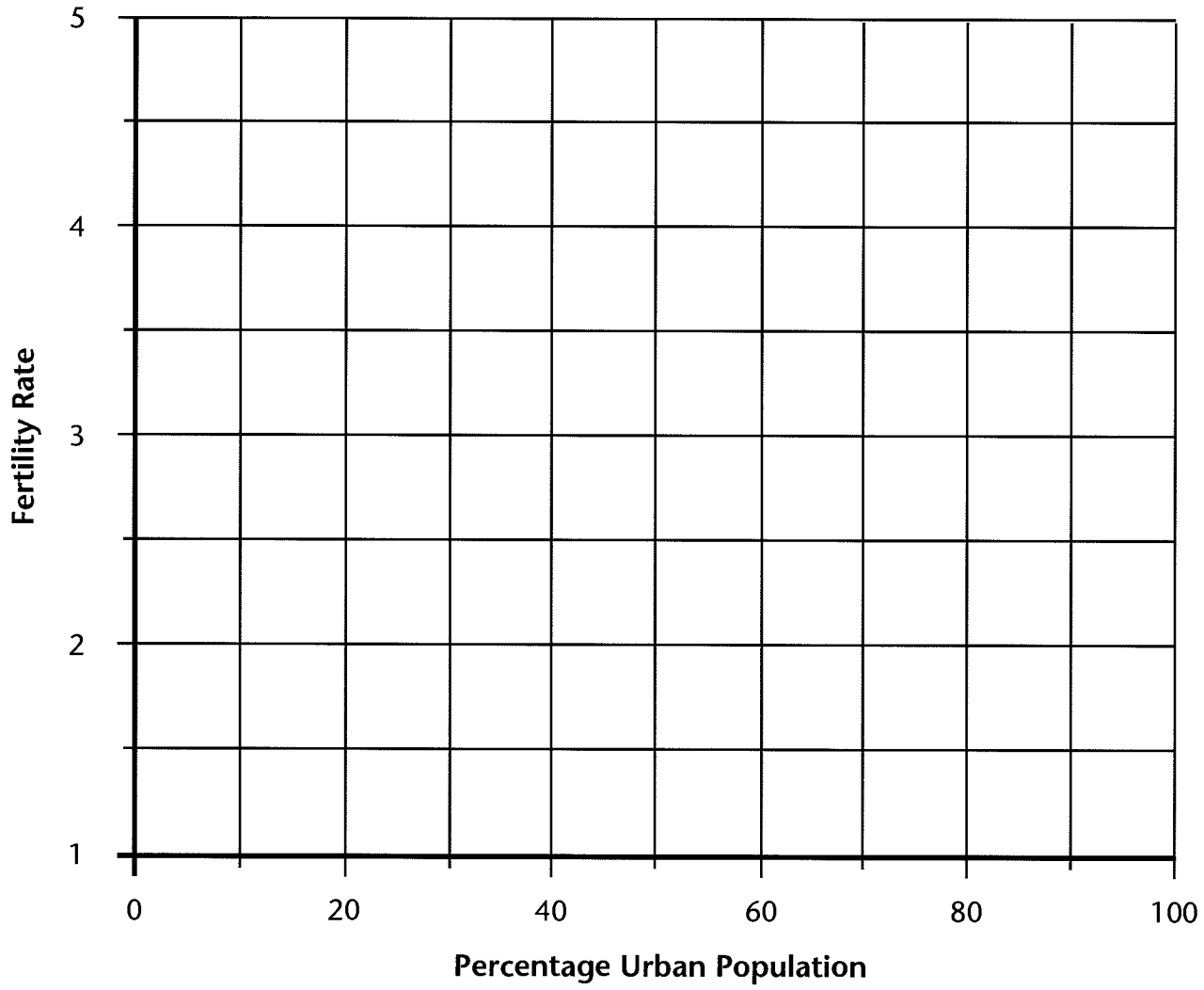
Scattergram

Title:

_____

_____

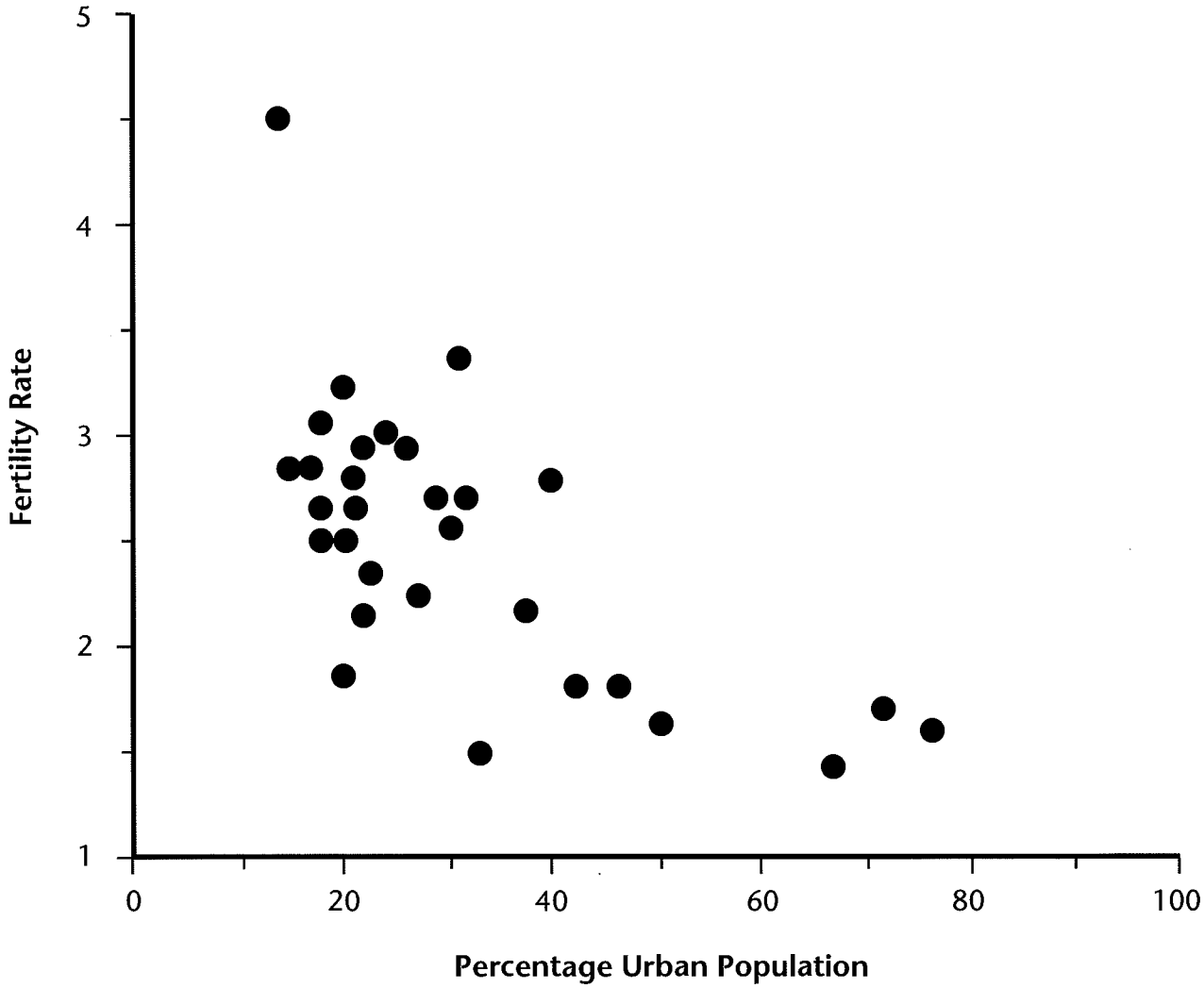
_____



Scattergram

Title:

[Relationship Between Fertility Rate and Percentage of Urban Population by Province in China, 1990]



Managing Population Growth in Kenya

Suppose Kenya's government has $3.5 million for projects to help decrease its very high fertility rate. Working with the data in the table below, identify those projects you believe would be most effective. Make your decisions from the point of view of one of the five advisers to the Kenyan government described on pages 2 and 3 of the Student DataBook.

Cost	Government Programs to Manage Population Growth in Kenya
$1 million	Design a national media campaign (using radio, television, newspapers, billboards, leaflets, celebrities) to educate the public on the benefits of smaller families.
$75,000	Build primary schools to accommodate 250 women students in 60 villages. The hope is that this will allow women to get an education in order to get jobs—so their status does not depend only on bearing children.
$50,000	Enact laws giving women more rights regarding property, and involve women in the development of the population-management policy.
$15,000	Train women as family-planning workers and provide follow-up services for women practicing birth control.
$1 million	Equip 25 buses to provide health care and family-planning services to remote villages; train and pay salaries of workers on the buses.
$150,000	Train 60 village field-workers and pay their salaries; each of the workers will train 1,000 farmers to use farming techniques that don't require work by women and children.
$100,000	Design and put into action a national campaign to teach family planning, birth control, and birth spacing.
$1.75 million	Build and equip health clinics in 30 villages throughout the country.
$500,000	Train 100 high school graduates to teach in rural areas.

Advisers to the Government of Kenya

Government Demographer

You are Kenya's official demographer. You are an expert in the areas of population, growth rates, migration, and the future of Kenya's population. Kenya's population-growth rate was once more than 4.0 percent, and the fertility rate reached 8.1 in the early 1980s. At that point it was the fastest-growing country in the world. The numbers have come down a little, but even at its present growth rate of 3.7 percent, Kenya's population will double in 19 years. You need to persuade the team to understand the consequences of such rapid population growth. Another consideration for you is the age and sex makeup of the population. The population pyramid (Figure 13 on page 53) will help you consider the proper types of population planning programs for your country. The critical factor is that with so many people under age 15, Kenya's population will continue to grow even if the fertility rate is lowered.

Minister of Agriculture

You are the Minister of Agriculture. You understand that as population grows, population densities increase on the best farmland. Individual land-holdings for crop production get smaller, and eventually some people are forced to move. Their alternatives are to go to land that is less productive, clear forests to create new farmland, or become landless and move to the cities. All but the last contribute to more intensive use of the land, which depletes soil fertility and results in the decline of food production.

You are also a member of the Kikuyu ethnic group. The Kikuyu are currently in the majority in the government. But Kenya has over 35 distinct ethnic groups and you know that Kenyans divide their loyalties between their country and their own ethnic group. Ethnic rivalries are a source of fierce struggles for power. Some ethnic groups do not want to limit their population for fear that other groups will dominate the country's politics.

Minister of Education

As Minister of Education, you believe that more education will provide long-range benefits for your country. You realize that education increases peoples' opportunities, especially those of women. You feel strongly that more girls should have access to education and that girls should be required to attend primary school.

But the problem is complex. Children of better-educated women have greater chances of survival. So, improvements in education have contributed to the growth

rate. Studies show that if women have 1–4 years of education they have more children than women with no education, perhaps because they receive education on health care. But, if women continue on to secondary education, they have significantly fewer children. This may be because they receive training for jobs that makes them less dependent on children for their livelihood and status. However, in Kenya at this time only a tiny fraction of women have the opportunity for this additional education.

Minister of Social Services

You are the Minister of Social Services, and you believe that birth control should be made available to as many people as possible. Kenya's social and economic development has contributed to the high population growth rate. The death rate has declined in past years as a result of improved sanitation programs. Improvements in basic health care and nutrition mean that many more children survive to reproductive ages and have their own children.

An increasing number of rural people have been forced off of the land and have moved to the cities. The Kenyan economy has not been able to grow as rapidly as the expanding labor force. The new flow of labor to the cities compounds this problem, resulting in higher and higher rates of unemployment. You worry that if more and more people keep pouring into the cities, there will be serious shortages of food and other basic needs. You fear this will lead to political unrest.

Minister of Finance

As Minister of Finance, your main concern is Kenya's economy. You feel that Kenya must invest in its economic development in order to become an industrialized country. Without economic development, money to pay for new basic services will not be available. This is a common dilemma in developing countries. Economic development is needed to pay for basic services (such as education, health, water, and housing). At the same time, Kenya needs to provide these basic services so that people will be physically and mentally capable of participating in economic development.

Rapid population growth strains the resources of the government to resolve this dilemma. As the population grows, it puts added pressure on a government that is just beginning to provide basic services. More and more revenues must be diverted to basic services. Otherwise, the people's standard of living will decline. But this practice reduces the amount of money that is available for investment in economic development.

What Should Be the Basis of U.S. Immigration Policy?

Policymakers

Imagine that you belong to a committee of policymakers who are grappling with some important ethical questions. You have been asked to draft a policy for admitting immigrants to the United States. This process requires you to balance the protection of the public interest against the protection and humane treatment of oppressed people from other parts of the world.

As officials of your government, your foremost responsibility is to protect the public interest. Since the majority of citizens favor maintaining quota restrictions to some degree, the problem lies in defining a fair policy that also serves the interests of the country.

Evaluate the following criteria for admittance into the United States. Decide which of these criteria should form the basis for a policy for allowing immigrants into the country. Rank the criteria and determine your top five policies for admitting immigrants.

_____ Candidates should already speak English.

_____ Candidates should be able to read and write in their native language, even if they cannot speak English.

_____ Candidates should have a skill or trade that will ensure them finding employment in this country.

_____ Candidates should never have committed a felony (serious crime) in their native country.

_____ Candidates should never have been involved in politically subversive activities in their native country.

_____ Candidates should be given special consideration if they have tried to overthrow a dictatorial government and are being persecuted—and threatened with death—for this political activity.

_____ Candidates should be granted admission based only on humanitarian reasons rather than on political persecution.

_____ Candidates should be between the ages of 21 and 45 and in good health. They can bring their children.

_____ Candidates should be given special consideration if they live in a country constantly threatened by famine.

_____ Candidates should be given special consideration if they have been educated in the United States and already have friends or family here.

_____ Candidates should be given special consideration if they have a family or sponsor who will guarantee support for them.

_____ Other criteria:

Candidates

Imagine that you are a candidate for being admitted as an immigrant to the United States. Because of the present situation in your native country, you feel you must leave your friends and relatives.

Candidate One
Age: 15
Born in: El Salvador
Reason for leaving: A civil war was raging in my country. I came to live in California with my father, who migrated illegally a few years ago. I was afraid if I did not leave I would be drafted into the army soon.
Skills: No schooling; can work as a migrant farm worker; cannot speak English.

Candidate Two
Age: 59
Born in: Russia
Reason for leaving: I am a Russian Jew. I have waited 17 years to immigrate to Israel or another country that has a high Jewish population. I recently contracted tuberculosis.
Skills: Trained as an engineer; can understand English, but cannot speak it well.

Candidate Three
Age: 35
Born in: Argentina
Reason for leaving: I was imprisoned and then could not get a job because I was an active member of a political party opposed to the government.
Skills: Trained as a doctor; can speak some English, but not fluently.

Candidate Four
Age: 23
Born in: Afghanistan
Reason for leaving: I came to flee the war against the former Soviet Union. I am a member of the mujaheddin [a rebel group], a devout Muslim, and I will fight to the death against communism. I want to go back to my country some day.
Skills: High school education; no other training; cannot speak English.

Candidate Five
Age: 17
Born in: Iraq, but is a member of the Kurdish minority
Reason for leaving: I am trying to escape the Iraqi persecution of the Kurdish people. I am the only surviving child of my elderly parents. My brother was killed fighting in a war to oppose Saddam Hussein.
Skills: No schooling; no training; cannot speak English.

Candidate Six
Age: 19
Born in: Vietnam, but has an American father from the war, whom he doesn't know.
Reason for leaving: I left Vietnam in a boat because of the persecution. I came to find freedom, but now I am locked up in a Detention Center in Hong Kong surrounded by barbed-wire fences. There are 6,000 of us here. I don't want to spend the rest of my life here.
Skills: No schooling; no training; cannot speak English.

Candidate Seven
Age: 22
Born in: Haiti
Reason for leaving: In my country there are many arrests, tortures, and political killings. Our people are very, very poor, uneducated, and live in rural villages. I want a better life in another country.
Skills: Some schooling; trained as an agricultural worker; speaks some English.

Candidate Eight
Age: 32
Born in: Ethiopia
Reason for leaving: Our country has lived on the edge of poverty for many years and then our continued drought became a famine that drew worldwide attention. I realize I can never make a living here.
Skills: Worked for an oil company; some technical training; speaks English.

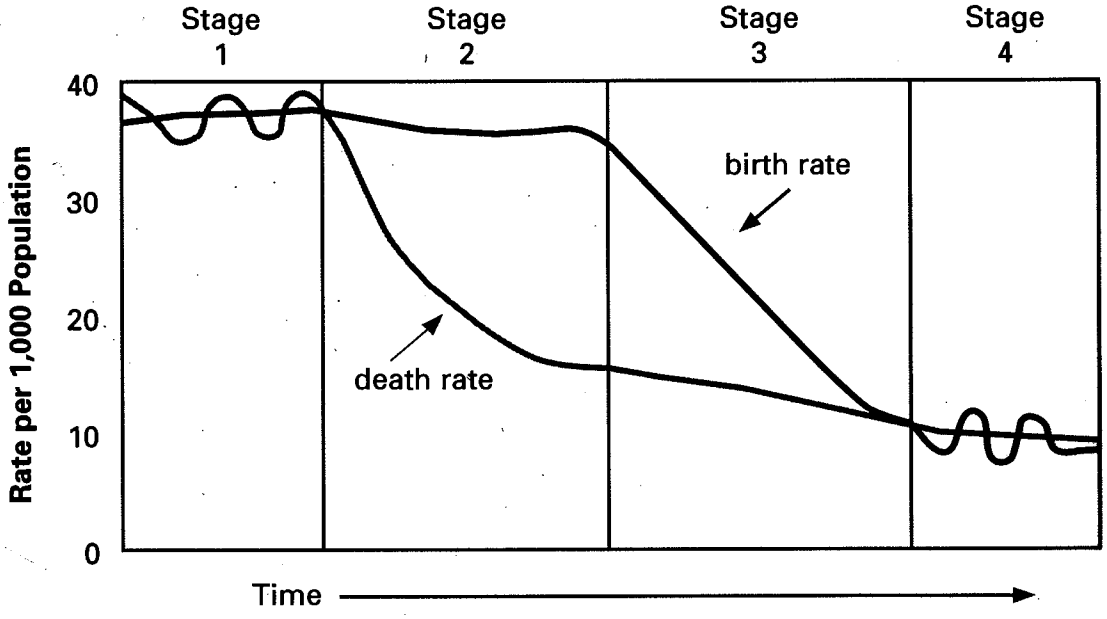
Population Data for Selected Countries, 1993

	Natural Increase (% per year)	Birth Rate (per 1,000)	Death Rate (per 1,000)	GNP per Person (1991 U.S.$)
Fast-Growing Countries				
Syria	3.8	45	7	1,110
Zaire	3.3	48	15	220
Pakistan	3.1	44	13	400
Ethiopia	2.8	47	20	120
Bangladesh	2.4	37	13	220
Turkey	2.2	29	7	1,820
Indonesia	1.7	26	9	610
Chile	1.6	21	6	2,160
Slow-Growing Countries				
South Korea	1.0	16	6	6,340
Canada	0.8	15	7	21,260
France	0.4	13	9	20,600
Austria	0.2	12	10	20,380
Italy	0.0	10	10	18,580

Source: Population Reference Bureau 1993.

Relationship of Model Stages and Growth Rates

Demographic Transition Model



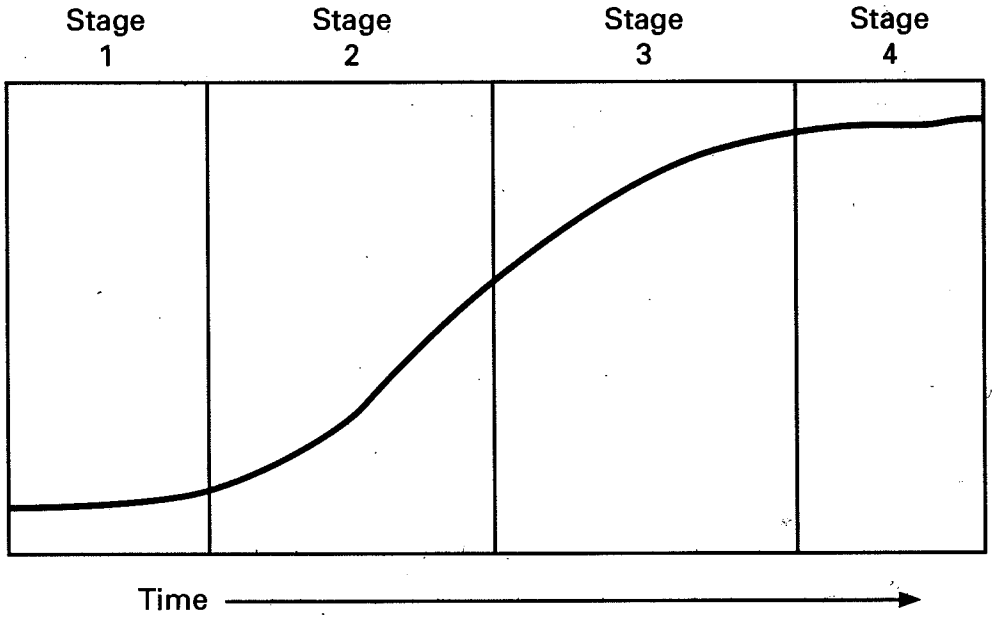
Total Population in a Country at Different Stages of the Model

Stage 1:
No growth, low population

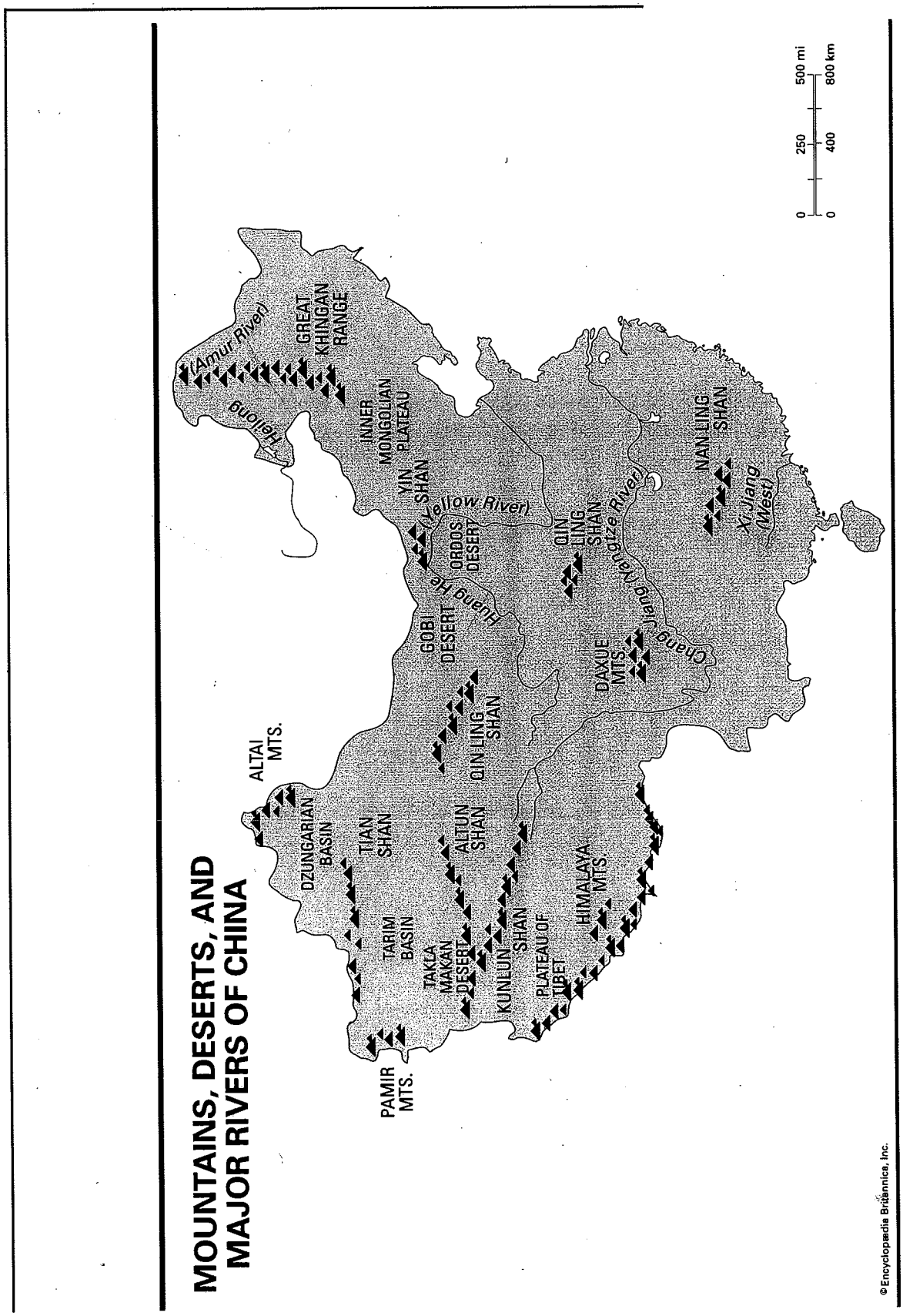
Stage 2:
Rapid population growth

Stage 3:
Population growth slows down

Stage 4:
No growth, high population



Map of China's Terrain



The One-Child Policy of the Chinese Government

Education about the benefits of smaller families

- Posters are put up throughout the country preaching the benefits of one-child families.
- Information is provided that shows how lowering the population also benefits the state.

Methods to help people limit family size

- Local officials and volunteers distribute contraceptives and advise couples on birth control.

Penalties for having large families

- Parents are fined if they have a second child less than four years after their first child.
- Urban parents of large families get no additional housing space and have their salaries cut.
- Rural parents of large families get no additional land, grain rations, or welfare assistance.
- All medical and schooling costs of additional children must be paid by the parents.

Incentives to have only one child

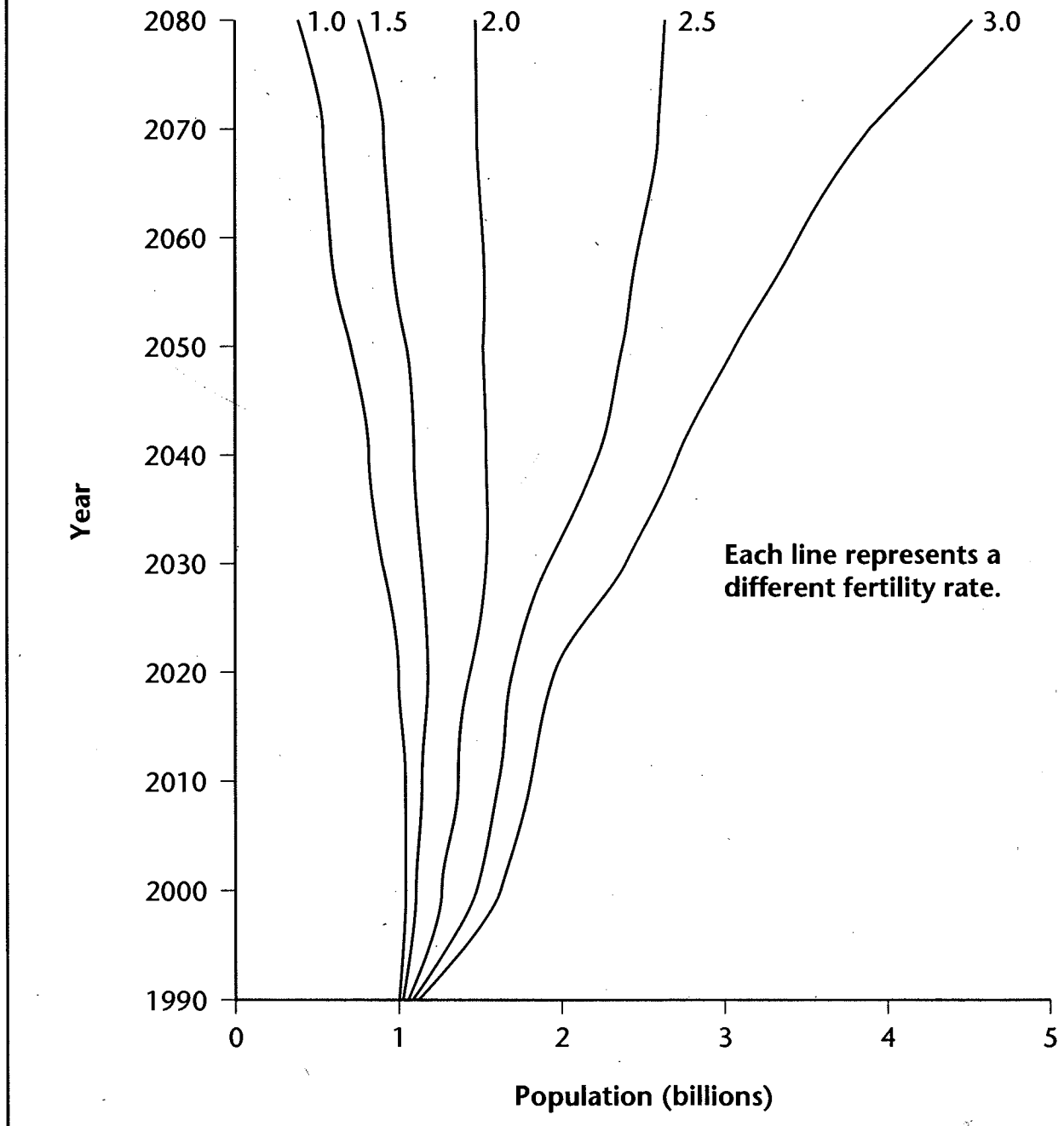
- Free schooling and medical care are provided for single children up to age 14.
- In cities, one-child families get their preference in housing and job assignments.
- In rural areas, one-child families get the same grain rations and amount of private land as larger families.
- Parents of single children receive monthly bonuses when they retire; childless parents are fully cared for by the government.

Peer pressure from other citizens to be patriotic and obey the policy

- Neighborhood groups police the size of local families.
- Families with more than one child are shunned by their peers.
- Communities encourage delayed marriage: 25 years old for women and 27 for men in cities; 23 years old for women and 25 for men in rural areas.

Sources: Scholastic Update 1987; Banister 1987.

Population Projections for China, 1990–2080 Based on Different Fertility Rates



Sonnet by Emma Lazarus (1849–1887)

Not like the brazen giant of Greek fame,
With conquering limbs astride from land to land;
Here at our sea-washed, sunset gates shall stand
A mighty woman with a torch, whose flame
Is the imprisoned lightning, and her name
Mother of Exiles. From her beacon-hand
Glows world-wide welcome; her mild eyes command
The air-bridged harbor that twin cities frame.
"Keep, ancient lands, your storied pomp!" cries she
With silent lips. "Give me your tired, your poor,
Your huddled masses yearning to breathe free,
The wretched refuse of your teeming shore.
Send these, the homeless, tempest-tost to me,
I lift my lamp beside the golden door!"

BRITANNICA GLOBAL GEOGRAPHY SYSTEM

GIGI

Geographic Inquiry into Global Issues

Population Growth

Program Developers
A. David Hill, James M. Dunn, and Phil Klein

Regional Case Study
East Asia

Britannica
ENCYCLOPAEDIA BRITANNICA EDUCATIONAL CORPORATION
310 South Michigan Avenue Chicago, Illinois 60604

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Contents

GIGI National Field Trial Locations

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Juneau, AK
Birmingham, AL
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Memo to the Student from the GIGI Staff

GIGI stands for *Geographic Inquiry into Global Issues,* which is the name of a series of modules. Each module inquires into a different world issue. We wrote this memo to explain that GIGI is different from most textbooks you have used.

With GIGI, you can have fun learning if you think like a scientist or detective. The main business of both scientists and detectives is puzzle-solving. They use information ("data" to the scientist and "evidence" to the detective) to test their solutions to puzzles. This is what you do with GIGI. GIGI poses many puzzles about important global issues: Each module centers around a major question, each lesson title is a question, and there are many other questions within each lesson. GIGI gives you real data about the world to use in solving these puzzles.

To enjoy and learn from GIGI, you have to take chances by posing questions and answers. Just as scientists and detectives cannot always be sure they have the right answers, you will sometimes be uncertain with GIGI. But that's OK! What's important is that you try hard to come up with answers, even when you're not sure. Many of GIGI's questions don't have clear-cut, correct answers. Instead, they ask for your interpretations or opinions. (Scientists and detectives are expected to do this, too.) You also need to ask your own questions. If you ask a good question in class, that can sometimes be more helpful to you and your classmates than giving an answer.

The data you will examine come in many forms: maps, graphs, tables, photos, cartoons, and written text (including quotations). Many of these come from other sources. Unlike most textbooks, but typical of articles in scientific journals, GIGI gives its sources of data with in-text references and full reference lists. Where an idea or piece of information appears in GIGI, its author and year of publication are given in parentheses, for example: (Gregory 1990). If the material used is quoted directly, page numbers are also included, for example: (Gregory 1990, pages 3–5). At the end of the module you'll find a list of references, alphabetized by authors' last names, with complete publication information for the sources used.

To help you understand the problems, GIGI uses "case studies." These are examples of the global issue that are found in real places. "Major case studies" detail the issue in a selected world region. You will also find one or two shorter case studies that show variations of the issue in other regions.

We hope your geographic inquiries are fun and worthwhile!

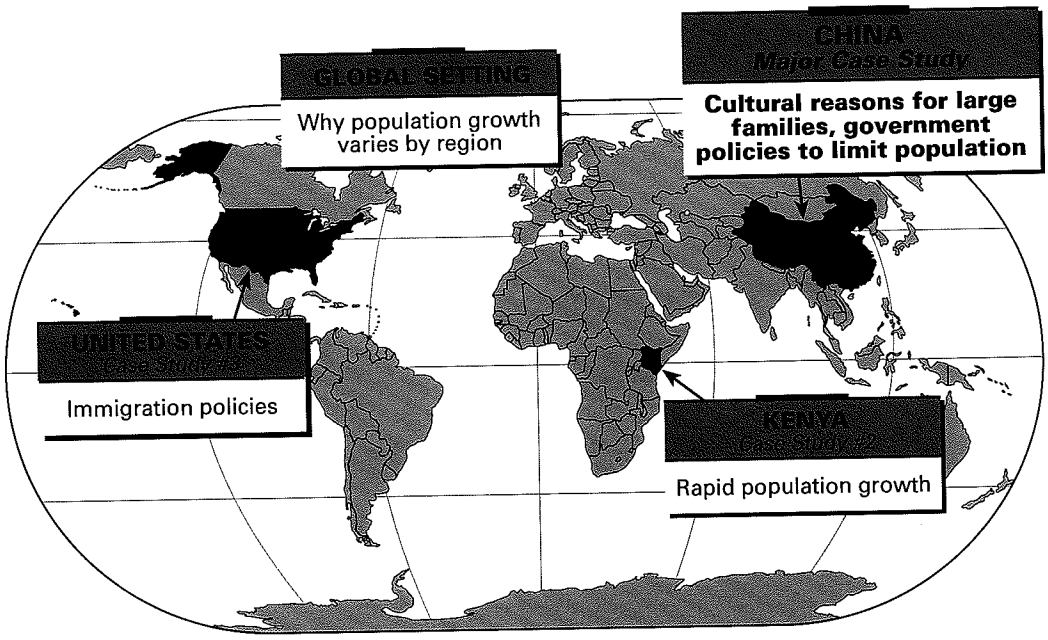
Population Growth

How is population growth to be managed?

- When does population growth become a problem?
- What are the best ways to manage population growth?
- Should governments decide how many people can live in a country?
- How would you feel if you were told how many children you could have?

Many of the world's environmental and economic problems are related to the issue of rapid population growth. When population increases, demands for natural resources and for economic development also rise. This module explores the management of population growth. The issue of population growth is different from place to place around the world. Policies to manage population growth must address the needs of each particular place. In this module, you will examine what three different countries—China, Kenya, and the

United States—are doing to manage their population growth. In these case studies, you will explore differences in patterns of population growth, cultural reasons for rapid population growth, and government policies to control population growth.



Questions You Will Consider in This Module

- Why does population grow at different rates in different world regions?
- How does population growth create environmental and economic problems?
- Why is it important to understand the different patterns of population growth?
- How do cultural influences affect population growth?
- What policies have governments used to manage population growth?
- Why are some population-growth policies more acceptable to people than others?
- What would help you understand population growth in your own country, state, or community?

Where is population growth a problem?

Objectives

In this lesson, you will

- Describe the problems associated with population growth.
- Identify world regions with rapid population growth.

Glossary Words

absolute growth
doubling time
gross national product (GNP)
migration
natural increase

Where is population growing most rapidly?

In 1993, the world's population was estimated to be 5.5 billion. In 1960, there were about 3 billion people. So, in just over 30 years the world's population nearly doubled. If population continues to increase at this rate, there will be over 7 billion people in the world by the year 2010 (Population Reference Bureau 1993).

Such a tremendous population growth rate has never been experienced before. Figure 1 below shows that world population grew much more rapidly in the twentieth century than in the previous 600 years.

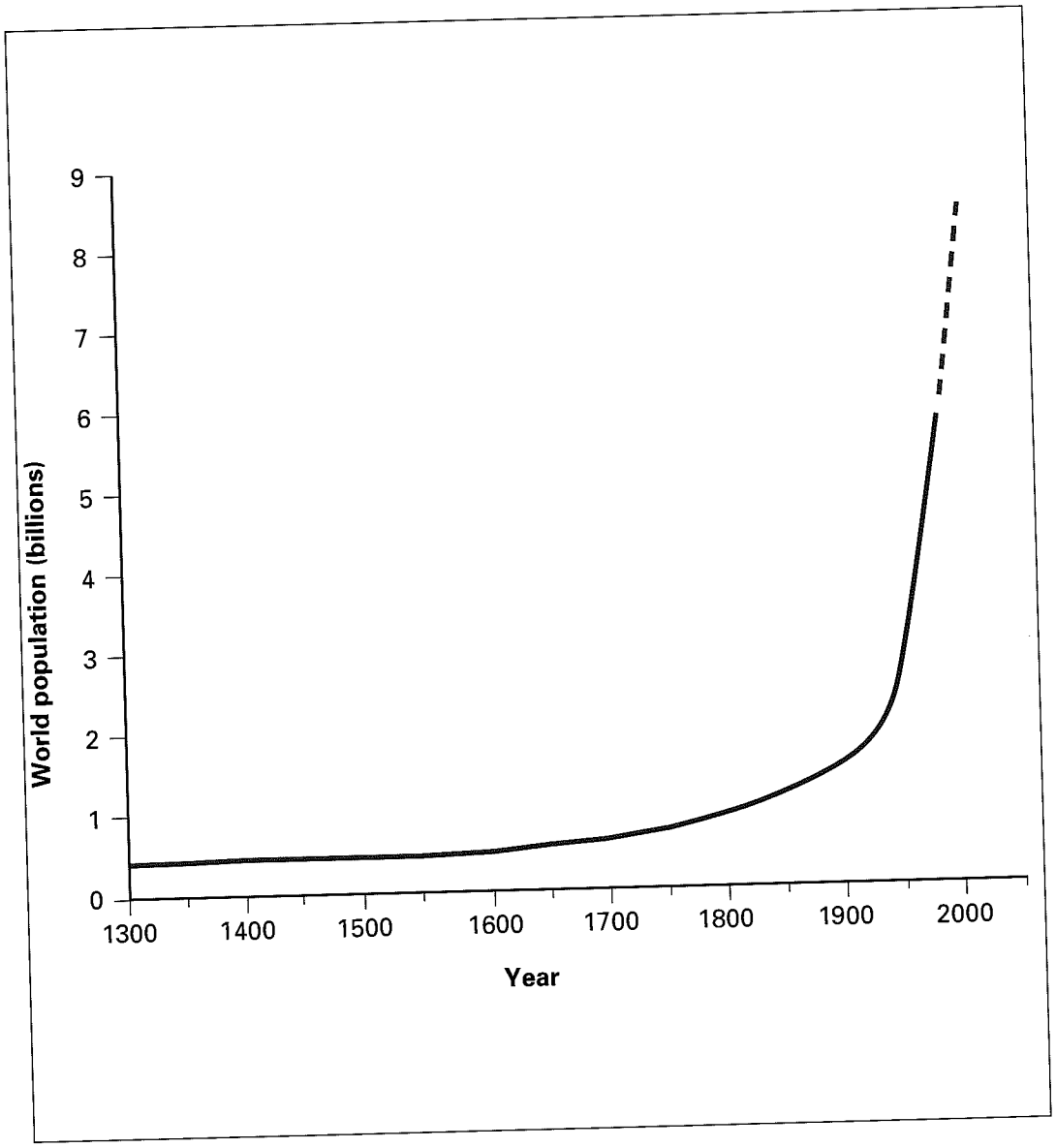


Figure 1 World population growth since A.D. 1300, with a projection to 2025 (dashed line).

Sources: Jordan and Rowntree 1990; Population Reference Bureau 1993.

Just how much is 1 billion? A billion equals 1,000 million, but the following examples may help you visualize the enormity of this number.

A billion sheets of paper.

- A one-inch stack of paper money contains 233 dollar bills. If you had a *million* dollar bills, the stack would be 358 feet high—about as high as a football field is long. But if you had a *billion* dollar bills, the stack would be nearly 68 miles high!
- You lived a *million* seconds when you were only 11.6 days old. But it won't be until you are nearly 32 years old that you have lived a *billion* seconds.

Which countries have the most people? You may know that China is the world's most populous country, with almost 1.2 billion people. But some of the other most-heavily populated countries in the world may surprise you (Table 1 below).

Table 1 Fifteen most populous countries in the world, 1993

Rank	Country	Population (millions)
1	China	1,179
2	India	897
3	United States	258
4	Indonesia	188
5	Brazil	152
6	Russia	149
7	Japan	125
8	Pakistan	122
9	Bangladesh	114
10	Nigeria	95
11	Mexico	90
12	Germany	81
13	Vietnam	72
14	Philippines	65
15	Iran	63

Source: Population Reference Bureau 1993.

Are the countries in Table 1 also the world's *fastest-growing* countries? Figure 2 on page 8 displays the annual rates of natural increase by country as of 1993. *Natural increase* is the population growth resulting from the surplus of births over deaths in a given year. This figure doesn't include migration into or out of a country. Natural increase is expressed as a percentage: for example, if a country had 100 people and a 1 percent rate of natural increase, its population in the following year would be 101. If it had 3 percent growth, its population would be 103, and so on.

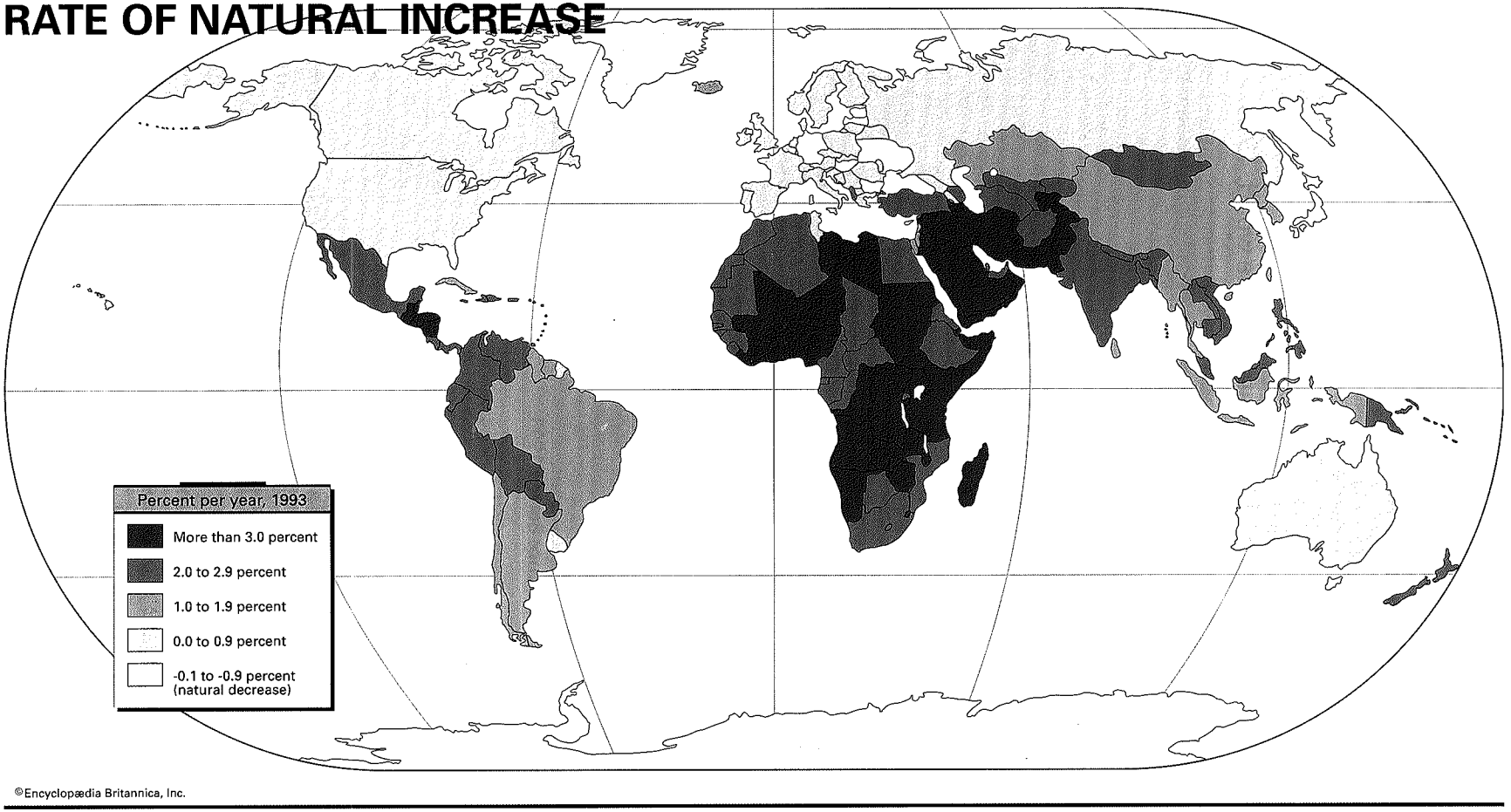


Figure 2 Annual rates of natural increase by country, 1993.

1. Based on the rates shown in Figure 2, which countries listed in Table 1 are growing the fastest?
2. In general, which areas of the world have the highest rates of natural increase? Which have the lowest rates of natural increase?
3. What do you think the regions with higher rates of population growth have in common?

Problems of rapid population growth

What problems are associated with population growth? Consider the following questions about the connections among population growth, the standard of living of the world's people, and the quality of the world's resources:

> What does this historically unprecedented [population] increase mean in human terms? Can the world feed twice as many people? Can it improve the diet of impoverished people in developing countries? Can its cities absorb several billion people and improve health, housing, and services? Or will the stress of population growth overwhelm our capacity to adapt, leading to a downward spiral of scarcity and conflict?
>
> Equally significant, what does a doubling of world population suggest for the global environment? Must forests inevitably be destroyed under the pressures of rapidly increasing food demand? Do twice as many people mean twice as much pollution and energy consumption? . . . Could the world in 2050 provide a comfortable standard of living for 10 billion people without inflicting possibly irreversible environmental damage? (World Resources Institute 1994, page 27).

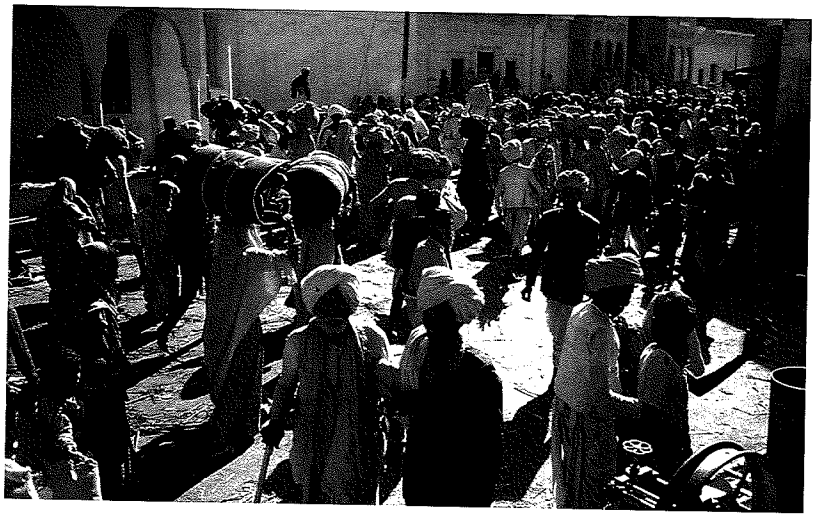
4. What problems does the quote mention as being part of the population growth issue?
5. What do you think about the problems of population growth? What do you think could be done about these problems?

How is population growth measured?

If you are to understand the issue of population growth, you will need to learn how it is measured. Two important measures are doubling time and absolute growth.

Doubling time

The easiest way to understand how much population growth occurs with different rates of natural increase is to look at population *doubling times*. If rates of natural increase stay constant, populations of world regions can be expected to double in the number of years shown in Table 2 (page 11). Higher rates of natural increase mean



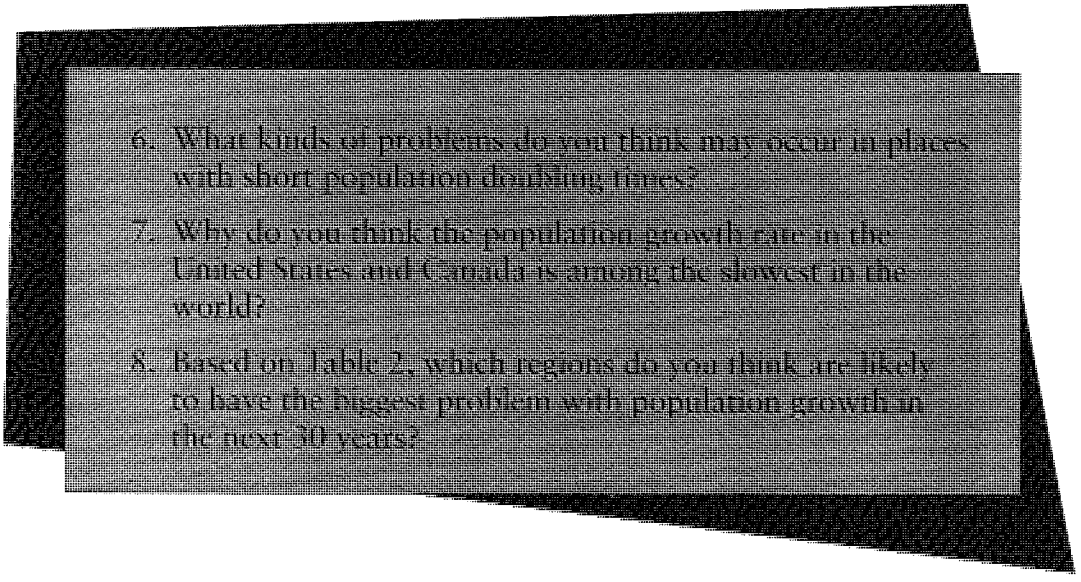
The population of South Asia will double in 31 years if present rates of growth continue.

that populations double *sooner*. But rates of natural increase don't usually stay constant, which is why the population estimates for 2025 don't exactly fit the current doubling times.

Table 2 Rates of population growth by region, 1993

Region	Population, 1993 (millions)	Natural increase (% per year)	Current doubling time (years)	Estimated pop., 2025 (millions)
Africa—South of the Sahara	523	3.0	23	1,265
North Africa—Southwest Asia	299	2.7	26	598
South Asia	1,253	2.3	31	2,144
Southeast Asia	460	1.9	36	696
Latin America	460	1.9	36	682
East Asia (excluding Japan)	1,275	1.2	60	1,669
Australia—New Zealand—Pacific	28	1.2	60	39
United States—Canada	287	0.8	92	371
Former Soviet Union	285	0.6	123	320
Japan	125	0.3	217	126
Europe	513	0.2	382	516
World total	5,508	1.6	42	8,426

Source: Population Reference Bureau 1993.



Absolute growth

Another way to measure population growth is to consider *absolute growth*. Absolute growth is the *actual* increase in population over a given period of time. Table 3 below compares absolute growth, for just one year, for 10 countries with different rates of natural increase. (These population estimates include migration, which is why Germany's population increased slightly despite its negative rate of natural increase.)

Table 3 Estimated absolute growth for 10 countries, 1992–1993

Country	Natural increase (% per year)	1992 population (millions)	1993 population (millions)	Absolute growth 1992–1993 (millions)
India	2.1	882.6	897.4	14.8
China	1.2	1,165.8	1,178.5	12.7
Nigeria	3.1	90.1	95.1	5.0
Iran	3.5	59.7	62.8	3.1
United States	0.8	255.6	258.3	2.7
Mexico	2.3	87.7	90.0	2.3
Kenya	3.7	26.2	27.7	1.5
Brazil	1.5	150.8	152.0	1.2
Japan	0.3	124.4	124.8	0.4
Germany	–0.1	80.6	81.1	0.5

Sources: Population Reference Bureau 1992; 1993.

9. In Table 3, did the countries with the highest absolute growth also have high rates of natural increase? Explain your answer.

10. Which countries do you think have the greatest population growth problem: those with high rates of natural increase or those with large absolute growth? Explain your answer.

In this module, you will find out more about how governments have dealt with high rates of natural increase (through a case study of Kenya) and high absolute growth (through a case study of China). As you study these cases, keep in mind that the potential problems posed by rapid population growth are not hopeless.

> Human ingenuity is an extraordinary resource, with the potential to mitigate [lessen] the environmental effects of population growth by finding ways to use resources more efficiently and to limit environmental pollution. . . .
>
> A critical challenge for government is how to devise policies that mitigate the environmental and resource effects of population growth and that encourage a slowing in the rate of population growth (World Resources Institute 1994, page 28).

Why does population grow rapidly in some parts of the world?

Objectives

In this lesson, you will:

- Describe the Demographic Transition model for population growth.
- Recognize how cultural values influence decisions about family size.

Glossary Words

birth rate
death rate
Demographic Transition model
developed country
developing country
gross national product (GNP)
overpopulation
subsistence agriculture

How do geographers explain population growth?

Why do rates of population growth vary so much among countries (Figure 2 on page 8)? Recall that natural increase or decrease is the difference between birth rate and death rate. If a country's birth rate is much higher than its death rate, its population must grow. One key to understanding patterns of birth and death rates is to look at the level of economic development in a country. Read the following paragraph by Lester Brown, in which he explains what geographers call the Demographic Transition model (Figure 3 on page 15).

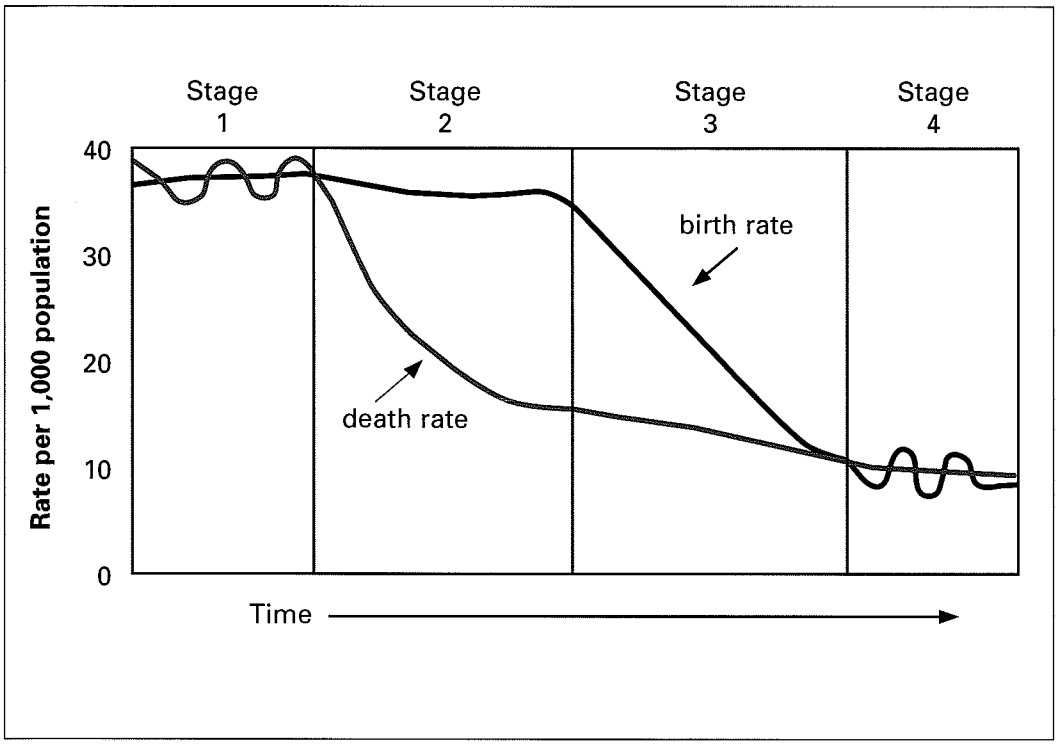


Figure 3 Demographic Transition model, showing expected trends in birth and death rates over time. Each stage refers to the relationship between birth and death rates at different levels of economic development. Time between stages is approximate.

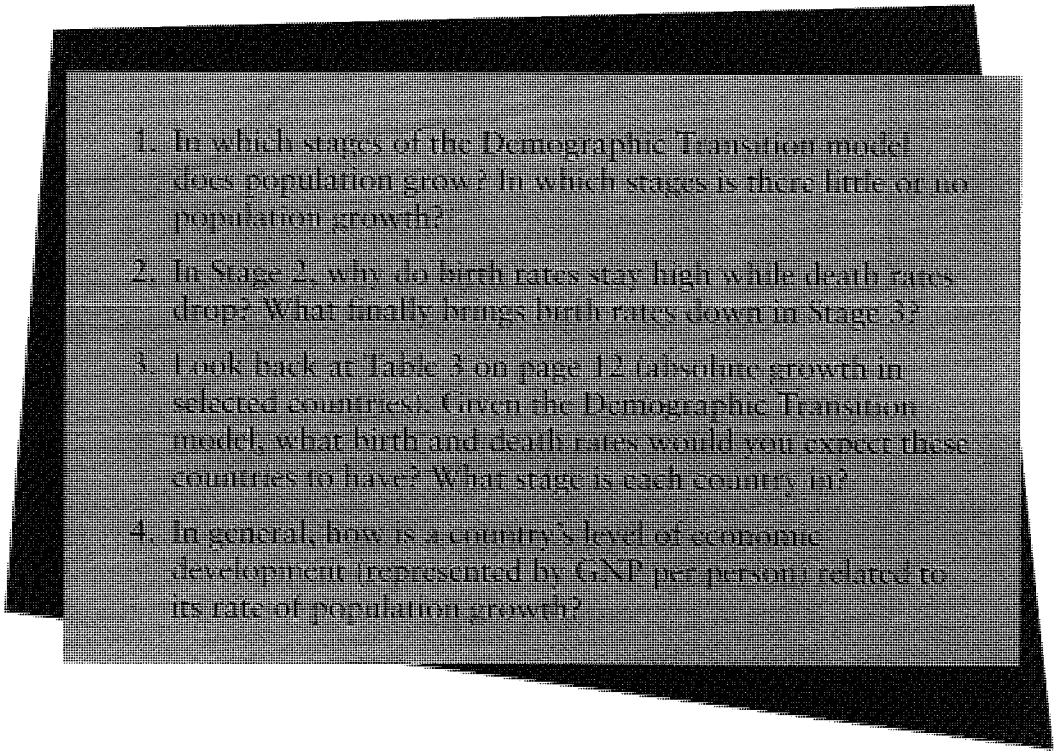
Source: Haggett 1975.

> During the first stage of the demographic transition, both birth and death rates are high and population grows slowly, if at all. In the second stage, living conditions improve as public health measures, including mass immunizations, are introduced and food production expands. Birth rates remain high, but death rates fall and population grows rapidly. The third stage follows when economic and social gains, combined with lower infant mortality rates, reduce the desire for large families. At the fourth stage, birth rates and death rates are in equilibrium [balance], but at a much lower rate (Brown 1987, page 20).

Keep in mind that this is only one model to explain patterns of population growth. In the real world, few transitions between demographic stages are smooth. Sometimes, the birth and death rates do not adjust to the new situation at the same time. The Demographic Transition model, however, is a useful generalization.

In the above quote, Brown noted that economic and social gains are important causes of the demographic transition from Stage 2 to

Stage 3. The most common measure of economic development is gross national product (GNP) per person. This is the total value of economic production in a country divided by the total population. *Developing countries*, such as Pakistan or China, have a lower GNP per person than *developed countries*, such as France or Canada.



1. In which stages of the Demographic Transition model does population grow? In which stages is there little or no population growth?
2. In Stage 2, why do birth rates stay high while death rates drop? What finally brings birth rates down in Stage 3?
3. Look back at Table 3 on page 12 (absolute growth in selected countries). Given the Demographic Transition model, what birth and death rates would you expect these countries to have? What stage is each country in?
4. In general, how is a country's level of economic development (represented by GNP per person) related to its rate of population growth?

Why is recognizing cultural differences important?

> Poverty reduction, elevating the status of women, and effective family planning are important components of any [population management] strategy. But countries differ too much from one another—for example, in availability of resources, rate of population growth, and social structure—to make sweeping policy proposals useful in specific contexts (World Resources Institute 1994, page 28).

"Overpopulation." "Too many children." "Ignorance about birth control." These and other simple phrases are often the answers given to why population is growing so rapidly. But the truth is more complex. You have already seen that high birth rates are found in countries with low economic development.

Patterns of population growth also reflect a place's culture. For example, in Israel, the number of children that women have differs according to religion. Christian women in Israel have an average of 2.3 children in their lifetimes, and Jewish women average 2.6 children. In contrast, Muslim women in Israel have an average of 4.7 children during their lifetimes (Omran and Roudi 1993).

The Demographic Transition model has been criticized for not addressing people's deeply rooted cultural values, which make having large families desirable. Many developing countries place a different value on having children than is found in developed countries such as the United States. The roles of women and children vary greatly in other places, and these roles can affect a family's decision about how many children to have. The following quote by Jodi Jacobson describes the situation common in Africa.

> Subsistence agriculture is the responsibility of African women, while land-ownership rights are held by men. Under the terms of customary marriage agreements, a man "buys" the labor of his bride and the couple's future offspring from her family. A woman's economic and social standing rises with the number of children she bears, particularly since children represent extra hands to help with farming, marketing, and other tasks. Each additional child affirms a woman's place within her marriage, ensures her access to land, and fulfills her "obligations" to her husband and her own family (Jacobson 1987, page 44).

5. Why are children valued so highly in agricultural societies, such as those found in Africa?
6. According to Jacobson, what are three reasons for high birth rates in Africa?
7. How do the roles of women in developed, industrialized societies (such as the United States) differ from those in societies described by Jacobson?
8. How might improving the status of women help reduce birth rates in developing countries?

Why is population growth a problem in China?

Objectives

In this lesson, you will

- Evaluate some consequences of population growth in China.
- Describe and explain the pattern of China's population distribution.

Glossary Words

arable land

desertification

overpopulation

water table

China has 21 percent of the world's people, but only 7 percent of the world's arable land.

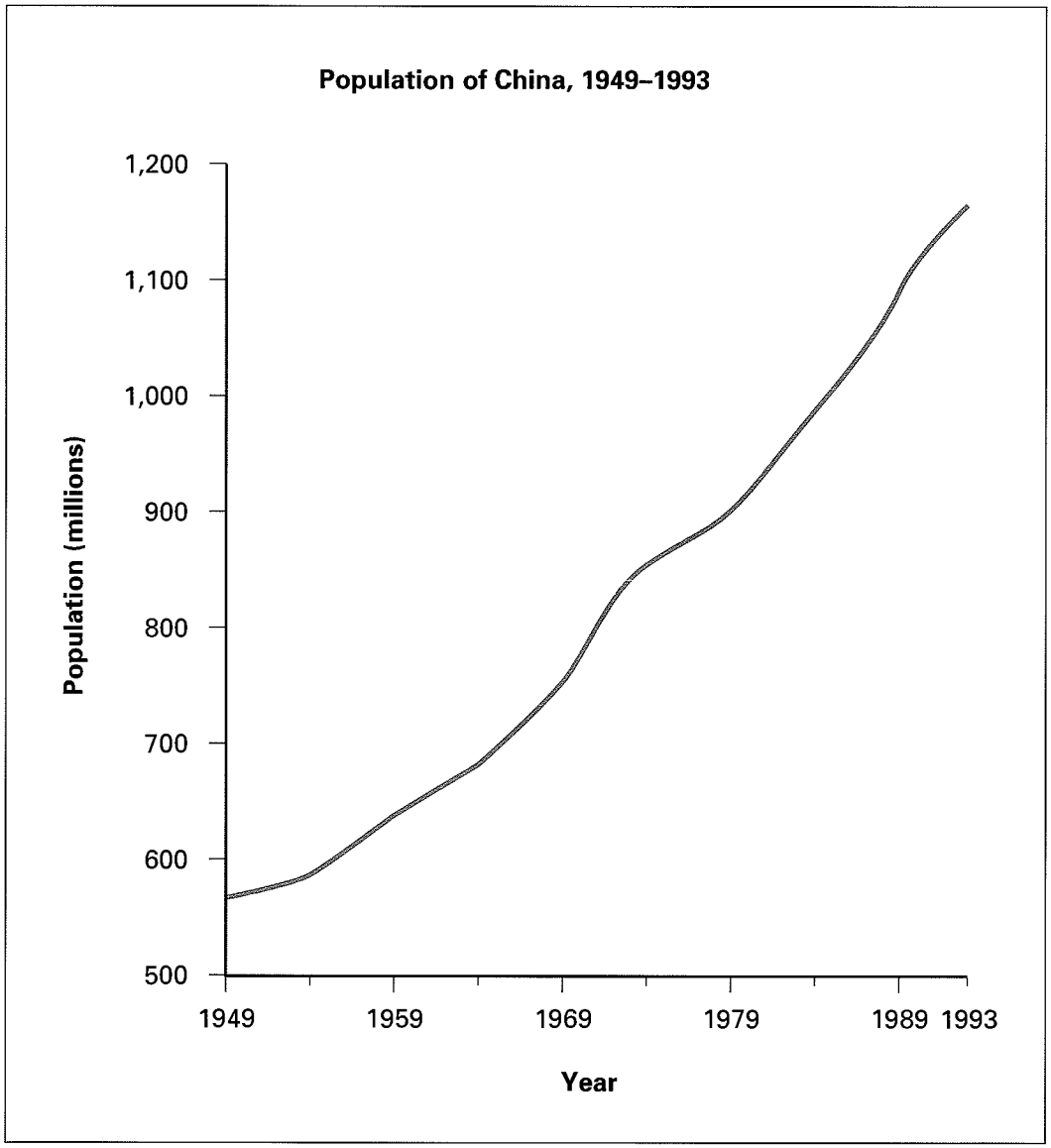


Figure 4 China's population growth, 1949–1993.

Sources: World Bank 1990; Yuan Tien et al. 1992.

What problems does high population growth pose for China?

Which of the following five statements helps explain the population growth that China has experienced? Be prepared to defend your choices.

- In 1993, China's population was 1.179 billion people.
- China has about 21 percent of the world's population, but only 7 percent of the world's arable land.
- When Mao Zedong, Chairman of China's Communist party, began his rule in 1949, China had an estimated population of 540 million. At Mao's death in 1976, the population had risen to over 900 million.
- Mao's explanation for his permissive attitude toward population growth was: "Every stomach comes with two hands attached."
- The average life expectancy in China soared from less than 42 years in the 1950s to about 70 years in 1993.

A population problem exists when a country cannot meet the basic needs of all its people. In other words, overpopulation occurs when a country's resources are not adequate to satisfy the needs of its population. Which of the five statements above points to a population problem in China?

When a country develops economically, it can provide more resources for more people. Since the 1980s, China's economy has been booming. The standard of living for the average person in China has improved dramatically since the 1980s. Yet the standard of living in China is still far lower than in most developed countries.

Can China maintain its economic boom enough to meet the needs of millions of new citizens? At present growth rates, China will have well over 1.5 billion people by the year 2025. That's an absolute growth of over 300 million people (more than the present U.S. population) in only about 30 years (World Resources Institute 1994).

The combination of rapid economic growth and a huge population poses a threat to China's environment and basic resources. The following example from Gansu Province raises some important issues.

Nature and Economic Boom Are Devouring China's Farmland

Gansu Province, China—China's frenetic economic boom and natural forces are shrinking the country's farmland at an alarming rate, scientists and government officials say. As a result, Chinese and Western scientists are raising new questions about the country's ability to feed itself in the future.

The consequences of China's failure to feed itself could radiate across oceans and national boundaries, with millions of refugees fleeing hunger or instability caused by food shortages.

China today is hardly facing famine. The country recorded a bumper grain harvest in 1993. But bumper crops will have to grow ever larger, as arable land declines, to feed the swelling population. The remarkable achievements of Chinese agriculture, one of the great successes of the Communists, stand on an ever-weakening foundation of natural resources.

Nowhere in China does the preservation of arable land seem as much a matter of survival as it does here.

Gansu is a land of arid moonscapes, violent windstorms, and canyon-size gullies gouged out of the famous "yellow earth" . . . soil, known for its fertility and fluffy texture.

Drought years outnumber rain years 10 to 1, and in a population of 22 million, 4 million are desperately poor, with annual incomes of $34 or less. Even the average Gansu resident scrapes by on $63 a year. Most people walk or ride several miles every day to get water, which has to be trucked into many counties.

Gansu's Vice Governor, Lu Ming, says the province may have lost half or more of its arable land in the long geological advance of the Gobi, Tengger, and Badain Jaran deserts.

Today, a huge irrigation project heaves water from the Yellow River over two small mountain passes and dumps it into 6,000 miles of smaller aqueducts and canals.

Begun in 1969 and completed last year, the irrigation project is the pride of Gansu's leaders, who say they have returned fertility to 81,000 acres in the region and given new homes to 150,000 peasants who were living a precarious existence in mountain villages.

But already the unrelenting calculus of China's growth has begun to erode the gains.

The province's population is growing by more than 300,000 per year and, as Vice Governor Lu had to admit, "For sure, the population is growing faster than the arable land is growing" (Tyler 1994, pages 1, 4).

The following are four problems China is facing that are related to its high population growth.

Loss of farmland

In the 1960s, millions of hectares [a land unit equal to about 2.5 acres] of forest land were converted to cropland to achieve Mao Zedong's goal of raising grain production. Widespread tree cutting [worsened] soil erosion and desertification, which devoured at least 4 million hectares of arable land between the 1950s and 1970s. . . .

In the 1990s, losses to housing, industrial construction, mining, hydropower, transportation . . . and environmental degradation will probably range from 3 to 6 million hectares. . . .

Land conversion is not the only threat to Chinese agriculture; land degradation is another. China now has about 153 million hectares of desert, nearly 16 percent of its land area. . . . The rate of desertification appears to be increasing. . . . Nearly 4 million hectares of farmland and almost 5 million hectares of pastureland are threatened by desertification (World Resources Institute 1994, pages 63, 71).

Increasing energy use

China became one of the world's top energy users almost overnight: between 1970 and 1990, energy use [more than tripled]. . . . The rapid climb in energy consumption is projected to continue, driven by the goal of quadrupling economic output between 1980 and 2000. . . .

Coal . . . forms the backbone of [China's] energy system, supplying over 75 percent of all commercial energy. . . . For many years, Chinese government officials indicated that they would rely on coal for energy development. That policy, however, was based on estimates of coal reserves that have been dramatically reduced. . . .

Despite its resource endowment and the rapid expansion of its energy sector, persistent and severe shortages plague China. . . . About one-third of China's industrial enterprises were unable to operate at full capacity [in 1989]. Residential customers, too, are subject to regular blackouts and brownouts (World Resources Institute, pages 66–67).

Depletion of water resources

The [scarcity] of water in northern China and in parts of southern China is degrading the environment and limiting prospects for

economic growth. . . . Demand for water is expected to soar by the beginning of the century, especially in the residential and industrial sectors.

Finding new water sources to meet the demand will be difficult. Some 300 cities in northern China experience water shortages, 50 of them severely. Elsewhere, supplies are almost fully utilized. In some areas of northern China, as much as 68 percent of surface water and 84 percent of groundwater are already used, and the water table is falling in many places. In fact, . . . in some cities . . . the ground level is actually dropping and sea water is entering underground reserves (World Resources Institute 1994, page 73).

Air and water pollution

China's use of coal as its principal source of energy exacts a heavy price in air pollution, and thus human health. . . . Urban centers [in northern China] record some of the highest readings in the world for total suspended particulates and sulfur dioxide. . . . Rapid [economic] growth has added cars and motor scooters to the road. . . . This development, if not accompanied by any pollution control technology, would substantially increase some pollutants. . . .

Many of China's rivers are polluted, most severely in urban areas. . . . In 1992, 68.6 percent of industrial wastewater and 18.5 percent of municipal wastewater received some treatment. The rest, however, entered rivers, lakes, and seas without treatment, [worsening] the pollution that has devastated marine resources in China and the health of its citizens (World Resources Institute 1994, pages 75–76).

The rapid growth of Chinese cities is taxing the country's natural resources.

1. Why is the loss of arable land such a crucial problem in a country with high population growth?
2. How does population growth create problems for China's energy resources?
3. Why is the demand for water expected to increase in China's residential and industrial areas?
4. Why could air and water pollution problems worsen with a large increase in population?
5. What policies could China's government enact to lessen resource and pollution problems?

Where do China's people live?

Before you study China's population-growth problem in more detail, it helps to learn something about the geographic distribution of China's people.

In 1935, the geographer Hu Huanyong drew an imaginary line from China's northeast to southwest—from western Heilongjiang Province to Yunnan Province (Figure 5 on page 25). This line divided China in two parts, one heavily populated and the other sparsely populated (Hsu 1992). Does this dividing line remain accurate today? By mapping the data in Table 4 on pages 25 and 26, you can discover the answer.

Woman and child in the Fujian province.

Figure 5 China's provinces and autonomous regions.

Table 4 China's population and population density by province, 1990

	1990 population (millions)	Population density (persons per sq km)
Total	**1,130.1**	**118**
Northeast region		
Heilongjiang	35.2	78
Jilin	24.7	132
Liaoning	39.5	270
North region		
Hebei	61.1	325
Shanxi	28.8	184
Beijing	10.8	644
Tianjin	8.8	777
Shandong	84.4	539
Henan	85.5	572

continued

	1990 population (millions)	Population density (persons per sq km)
Total	**1,130.1**	**118**
East region		
Anhui	56.2	404
Jiangsu	67.1	654
Shanghai	13.3	2,118
Zhejiang	41.4	407
Central region		
Hubei	54.0	290
Hunan	60.0	286
Jiangxi	37.7	226
Southeast region		
Fujian	30.0	248
Guangdong	62.8	353
Guangxi	42.2	178
Hainan	6.6	193
Southwest region		
Guizhou	32.4	184
Sichuan	107.2	188
Yunnan	37.0	94
Xizang (Tibet)	2.2	2
Northwest region		
Nei Monggol	21.5	18
Shaanxi	32.9	160
Ningxia	4.7	90
Gansu	22.4	49
Qinghai	4.5	6
Xinjiang	15.2	9

Source: Yuan Tien et al. 1992.

6. Where is most of China's population located?
7. If you were to draw a line separating China into two regions—one densely populated and one sparsely populated—how would it compare to the one suggested by Hu Huanyong in 1935?
8. What reasons can you give for this population density pattern?

China's government has tried to reduce the problems associated with its large population, such as the loss of arable land and energy and water shortages. There are zoning policies to prevent the conversion of good farmland to other uses, and policies to improve energy efficiency and water conservation. But the Chinese government realizes that it also needs to manage population growth to solve these issues. In the next lesson, you will see what policies China has used to manage population growth.

How has China attempted to manage its population growth?

Objectives

In this lesson, you will

- Understand the role of the family in traditional Chinese society.
- Describe the change in fertility rate in China since the 1960s.
- Develop a plan to manage China's future population growth.

Glossary Word

fertility rate

What was China's traditional family like?

In every society, the family is the basic social group, and in China the family's role has been exceptionally important. Older members taught, guided, and looked after the children. Children were taught to think first of the family and second of themselves. If children were successful in life and made a favorable impression on the community, their family received the credit. This was especially true for males. Male children were more prized than female children in traditional Chinese society because they assured continuance of the family lineage. The family was also held accountable for the shortcomings and failures of its members.

Children as "social security"

Because many children in China were lost to diseases and disasters, parents wished to have as many children as possible. To be left without children was considered a great misfortune. Numerous offspring ensured continuance of the family and of ancestor worship. (Actually, ancestors of the family were not worshiped as gods. Ancestors were esteemed because they had kept the thread of family life unbroken.) Children also had the duty of looking after their parents in their old age. And because peasants could not afford labor-saving equipment, they needed many hands to till the fields. Thus the large family was a kind of "social security" system in old China (Kublin 1972).

These three factors—continuing the family line, having support in old age, and having help around the house—are still the major reasons why Chinese families prefer to have large families and many sons. This is especially true in the countryside, as shown by the results of a survey of 808 people from a rural area of Hubei Province (Figure 6 on page 30).

Large families in the countryside provide helping hands in the fields.

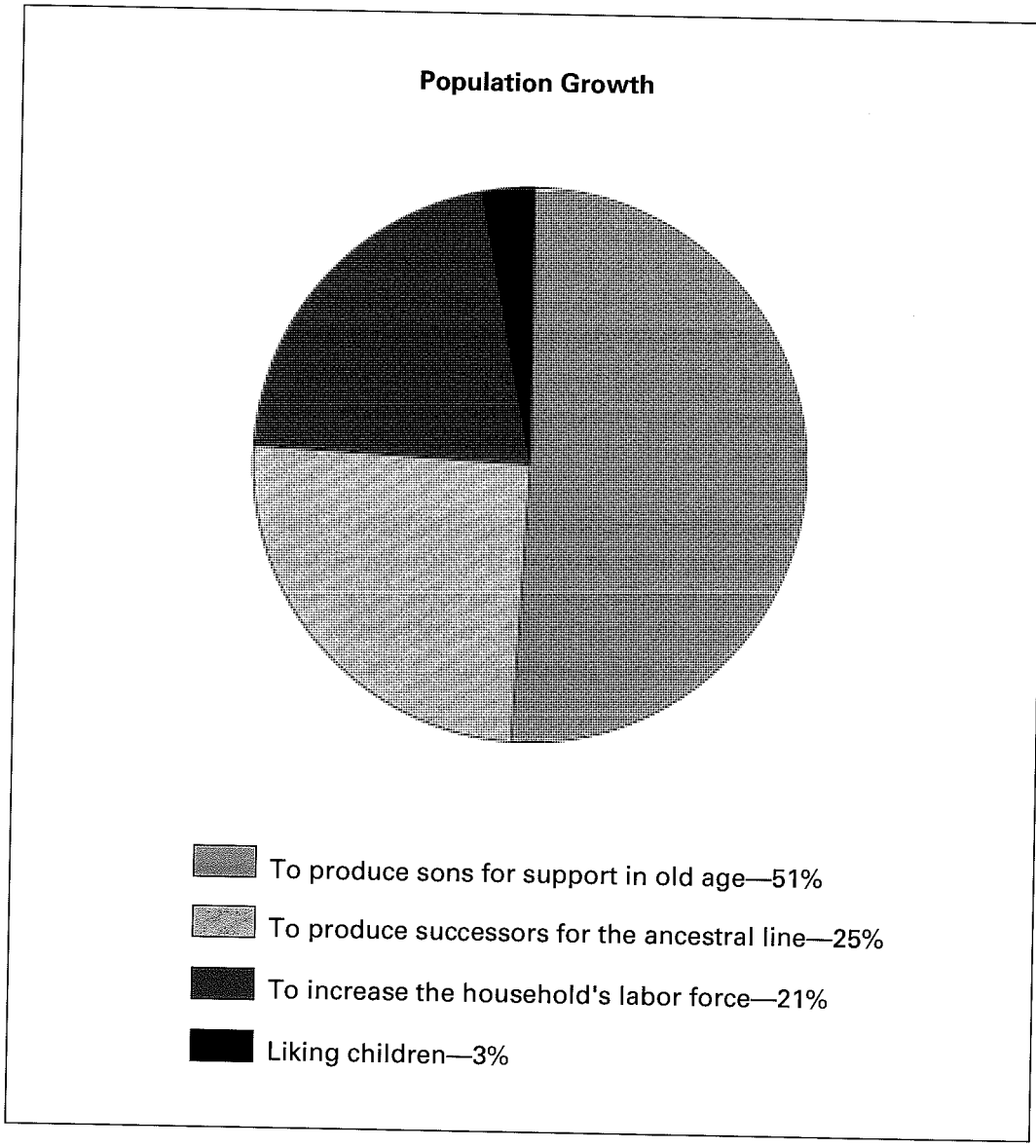


Figure 6 Reasons given by rural Chinese for wanting many children.

Source: Davin 1985.

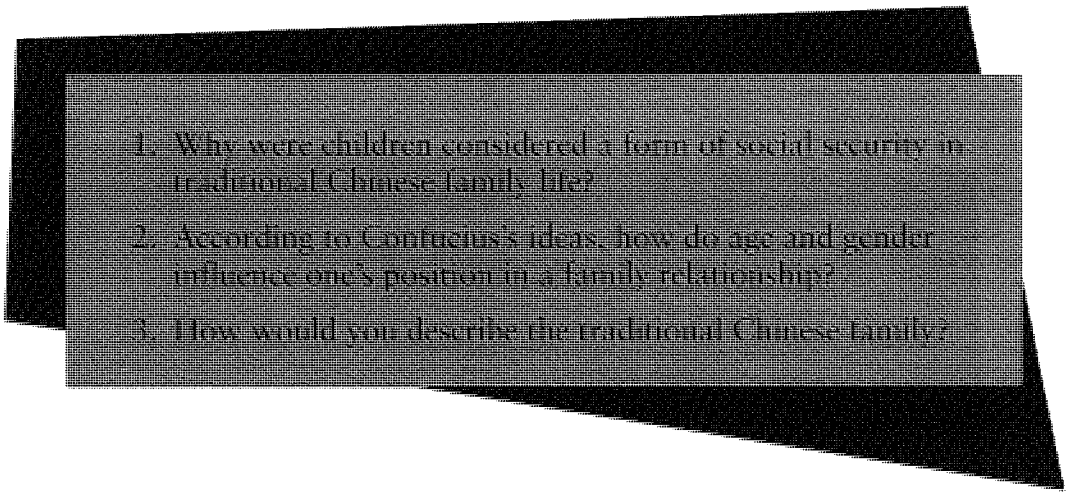
Confucius and the "Five Relationships"

Around 500 B.C., a Chinese philosopher Westerners call Confucius taught and wrote ideas that were spread by his students throughout China. In his teachings, Confucius defined what was proper social conduct. These ideas reflected and solidified China's

traditional male-dominated family and authoritarian political structure. Confucian ideas have dominated Chinese views about society for over 2,000 years. Although these traditions were banned by the Communists, they remain influential.

Central to Confucian philosophy is its focus on social relationships. Confucius defined what he called the "Five Relationships." These relationships defined the structure within the family and between people and their government. He believed that if all people adhered to these relationships, then harmony would exist. In each of the five relationships listed below, the person listed first was always considered superior to the second.

1. Ruler → Subject
2. Husband → Wife
3. Father → Son
4. Older brother → Younger brother
5. Older friend → Younger friend



How has China's fertility rate changed?

A country's *fertility rate* tells us how many children, on average, each woman in that country has during her childbearing years (ages 15 to 49). A fertility rate of 2.1 is needed to replace the current population. Why is this true?

Table 5 on page 32 shows the percentage changes in fertility rate since the 1960s for several developing countries, including China. Data for the United States are shown for comparison.

Table 5 Changes in fertility rate for selected countries

Country	Fertility rate Early 1960s	1993	Percentage change, since 1960s
China	5.9	1.9	–68
Thailand	6.4	2.4	–63
Brazil	6.2	2.6	–58
Mexico	6.7	3.4	–49
Egypt	7.1	4.6	–35
India	5.8	3.9	–33
Bangladesh	6.7	4.9	–27
Guatemala	6.8	5.2	–24
Kenya	8.2	6.5	–21
Nigeria	6.9	6.6	–4
Afghanistan	7.0	6.9	–1
United States	3.4	2.0	–41

Sources: Population Reference Bureau 1993; U.S. Bureau of the Census 1993.

4. In the early 1960s, how many children were born into the average Chinese family? How did this number compare with the family sizes of other developing countries in the 1960s? In the United States?

5. According to Table 5, what has been the global pattern in fertility rate since the early 1960s? What reasons can you think of to account for this trend?

How did China's government encourage smaller families?

The decline in China's fertility rate (Table 5) was the most dramatic in world history. It occurred as a result of efforts begun by

China's Communist government in the 1960s to reduce population growth. At that time, the government established family planning offices at the national and provincial levels. In the 1970s, the government began campaigns to persuade Chinese couples to marry later and have fewer children. It recommended that couples have "at most two, [and] best only one" child. The fertility rate declined as the average marriage age of women increased and as family-planning messages about birth control services and abortions became more accepted (Hull and Yang 1991).

By the late 1970s, most married couples in China were having only two or three children (Banister 1987). But China's population had already exceeded 1 billion. At the current growth rates, the Chinese population would reach 1.3 billion by the turn of the century. China's leaders recognized that this extremely high absolute growth would lead to serious problems—such as shortages of farmland, housing, water, and energy.

It was clear that the dramatic decline in the fertility rate was not enough to curb China's population problem. Government leaders were convinced that stronger policies were needed to slow down population growth—otherwise, any chances for real economic growth would be lost. A government official made the following statement in late 1978:

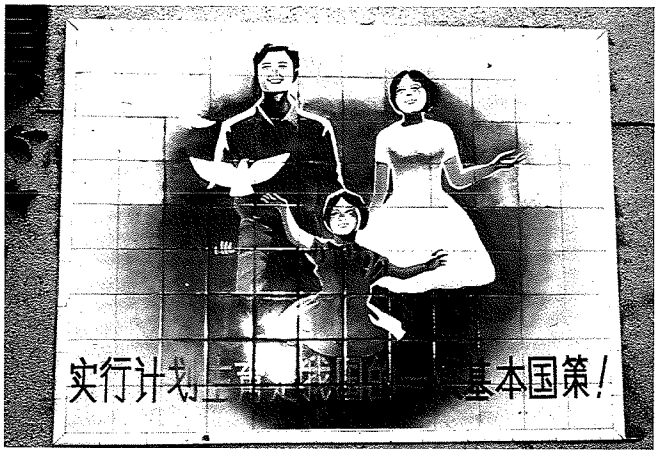
> If a couple in our country has two children, we cannot basically change the situation in which our population growth is [too high to meet] the needs of economic development by the end of this century. Really, to solve this problem, the only way is to preach vigorously that a couple should have only one child (Banister 1987, page 183).

In 1979, China's government introduced the "One-Child Policy" in an attempt to reduce population growth and to raise the standard of living. At first, the motto of this new campaign was "One is best, at most two, never a third." The One-Child Policy promised certain rewards for couples who had only one child—and promised certain penalties for those who had more than three children. (At first, couples who had two children received neither reward nor penalty.) Recognizing that rural families had a stronger tradition of many children than urban families, the government created different rewards and penalties for rural people. Throughout China, posters on billboards promoted the benefits of limiting family size to one child (Figure 7 on page 34).

Figure 7 Examples of billboard posters promoting the One-Child Policy of the Chinese government.

6. Do you agree that the Chinese government needs to control its population? Why or why not? Should it establish a policy that reduces population growth? Why or why not?
7. Why would the One-Child Policy need to address the traditional reasons why people chose to have large families?
8. How did the billboard posters (Figure 7) portray the one-child family favorably? Why would posters be useful in promoting this policy?
9. Do you think most Chinese would choose to have only one child? Why or why not?
10. What information would you need to find out whether the One-Child Policy was successful?

Through population-management strategies such as the One-Child Policy, China's Communist government sought to eliminate Confucian influence throughout society. Figure 8 on page 36 shows some of the differences between traditional Chinese family life and the goals for the modern family sought by China's government. How do these goals address the traditional reasons couples had many children?



A poster promoting the One-Child Policy.

Social structure	Traditional China	Goals of modern China
Role of women	• Subordinate to men • Main job is to work in the fields • Status is dependent on having children • Usually raise children in their old age • Viewed as commodities	• Working women are very important for the welfare of society • Status is not as dependent on having children • Women have legal equality
Role of men	• Superior to women	• Equal to women
Role of children	• Work on the land	• Cared for by the state
Family values	• Early marriage • No birth control • Many children provide security • No education for women	• Late marriage • Family planning • One-child preference • Women get education, which gives them more freedom
Size of family	• Many children	• State recommends number of children—One-Child Policy
Social security	• Son takes care of parents in their old age	• State as well as child takes care of parents in their old age

Figure 8 Summary of goals for changes in social structures between traditional China and modern China.

How well has China managed its population growth?

Objectives

In this lesson, you will

- Evaluate the success of China's One-Child Policy in reducing population growth.
- Identify the reasons that led to modifications of the One-Child Policy.
- Speculate about the future of China's population-growth problem.

Glossary Words

birth rate

fertility rate

infanticide

population pyramid

How has the One-Child Policy affected the fertility rate in China?

To manage its population growth, China established the One-Child Policy to reduce the fertility rate. Why does China's government believe that lowering the fertility rate is essential for managing population growth? Figure 9 on page 38 shows the effect on future population size, if China's growth-management plans succeed.

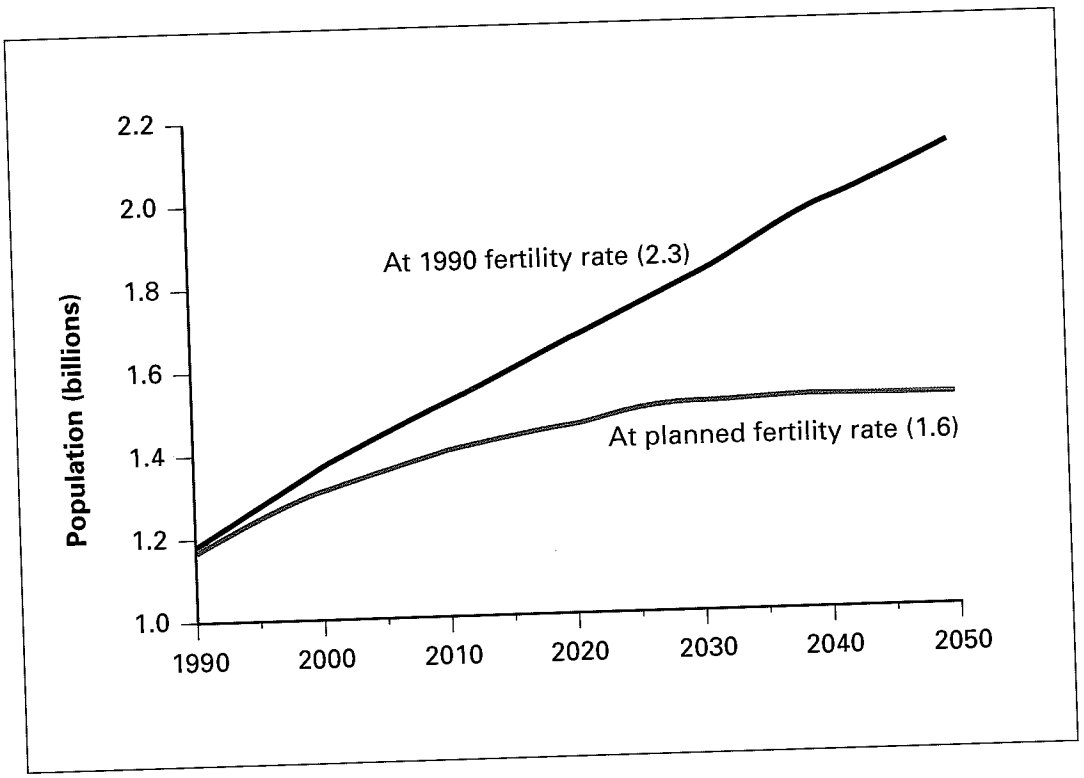


Figure 9 Two projections of China's population, 1990–2050. The top line shows growth at the 1990 fertility rate. The bottom line shows growth at the planned, reduced fertility rate.

Source: Yuan Tien et al. 1992.

1. What is the difference between the two projected populations in 2050?
2. Why do you think the planned fertility rate shown in Figure 9 was 1.6, if the government's goal was for each woman to have only one child?
3. Which groups in China do you think would be hardest to persuade to have only one child?

Urban-rural differences in fertility rate

You have seen (Table 5 on page 32) that China, like other developing countries, has lowered its fertility rate. In the 1960s, Chinese women had an average of almost six children during their lives. By 1990, the fertility rate had dropped to 2.3, and in 1993 it was down to 1.9 children per woman. So it would seem the Chinese policies have worked. But a closer look (Table 6 on page 40) shows that there are important differences in fertility rate within China. These data are for 1990, the last year for which complete census data are available, but the patterns remain the same today.

Chinese schoolchildren.

Table 6 Fertility rate and urban populations by province, 1990

	1990 population (millions)	Fertility rate 1989–1990	Percentage urban population
Total	**1,130.1**	**2.3**	**26**
Northeast region			
Heilongjiang	35.2	1.8	47
Jilin	24.7	1.8	43
Liaoning	39.5	1.6	51
North region			
Hebei	61.1	2.5	19
Shanxi	28.8	2.5	28
Beijing	10.8	1.6	73
Tianjin	8.8	1.8	69
Shandong	84.4	2.2	27
Henan	85.5	3.0	16
East region			
Anhui	56.2	2.6	18
Jiangsu	67.1	2.1	21
Shanghai	13.3	1.5	66
Zhejiang	41.4	1.5	33
Central region			
Hubei	54.0	2.6	29
Hunan	60.0	2.5	18
Jiangxi	37.7	2.6	20
Southeast region			
Fujian	30.0	2.7	21
Guangdong	62.8	2.7	37
Guangxi	42.2	2.8	15
Hainan	6.6	2.9	24
Southwest region			
Guizhou	32.4	3.2	19
Sichuan	107.2	1.9	20
Yunnan	37.0	2.8	15
Xizang (Tibet)	2.2	4.5	13
Northwest region			
Nei Monggol	21.5	2.1	36
Shaanxi	32.9	2.8	22
Ningxia	4.7	2.8	26
Gansu	22.4	2.4	22
Qinghai	4.5	2.6	27
Xinjiang	15.2	3.4	32

Source: Yuan Tien et al. 1992.

4. Why do you think the fertility rates in provinces with mostly rural areas differ from those in provinces with more urban populations?
5. What kinds of programs might help reduce the fertility rate in rural areas?

Population growth among China's minorities

Differences in fertility rates exist not only between urban and rural areas but also between China's ethnic groups. About 92 percent of China's population consists of an ethnic group known as the Han. The other 8 percent is made up of over 50 distinct ethnic minority groups (Yuan Tien et al. 1992). Although 8 percent may not seem like much, in a country with over 1.1 billion people, 8 percent is over 91 million people!

> Because many of the minority nationalities are located in politically sensitive frontier areas, they have acquired an importance greater than their numbers. Some groups have common ancestry with peoples in neighboring countries. For example, members of the Shan, Korean, Mongol, Kazak, and Yao nationalities are found not only in China but also in [Myanmar], Korea, [Mongolia, Kazakhstan], and Thailand, respectively. If the central government failed to maintain good relations with these groups, China's border security could be jeopardized. Since 1949 Chinese officials have declared that the minorities are politically equal to the Han majority and in fact should be accorded preferential treatment because of their small numbers and poor economic circumstances. . . .
>
> The minority areas are economically as well as politically important. China's leaders have suggested that by the turn of the century the focus of economic development should shift to the northwest. The area is rich in natural resources, with uranium deposits and abundant oil reserves in [the] Xinjiang Autonomous

Region. Much of China's forest land is located in the border regions of the northeast and southwest, and large numbers of livestock are raised in the arid and semiarid northwest (Worden et al. 1988, page 86).

In China, minority groups are often clustered in certain regions. The five autonomous regions have significant numbers of minorities (Table 7 below). While China's total population increased by 12 percent from 1982 to 1990, its minority population increased by 36 percent (Yuan Tien et al. 1992). One reason for the higher fertility rate in these regions is that the One-Child Policy was not applied to the minority populations.

Table 7 Minority populations in autonomous regions

Autonomous region	Percentage non-Han population, 1990	Fertility rate, 1990
Guangxi	39	2.8
Nei Monggol	19	2.1
Ningxia	33	2.8
Xinjiang	62	3.4
Xizang [Tibet]	96	4.5

Source: Yuan Tien et al. 1992.

6. Look at the location of the autonomous regions in Figure 5 (page 25). Why do you think minorities were not included in the One-Child Policy?

7. Based on Table 7, what can you conclude about the future importance of non-Han peoples in China?

Why and how has the One-Child Policy been modified?

The two newspaper articles that follow report two different perspectives on China's efforts at managing population growth. The first article is based on a press conference held by an official of the Chinese government. The second article is based on reports from Chinese peasants and from diplomatic sources outside of China.

China Dramatically Slows Its Birth Rate

Beijing, April 1993—China has dramatically slowed its birth rate, lowering the number of children that Chinese women are expected to have in their lifetimes to U.S. and European levels, the government announced. . . .

Minister for Family Planning Peng Peiyun attributed the drop in birth rate . . . to greater vigilance by the ruling Communist party, improved birth control measures to implement the country's one-child family planning policy, and rising living standards that are prompting couples to have fewer children later in life (*Daily Camera* 1993, page 8A).

UN Population Fund May Leave China

Beijing, May 1993—Alarmed by indications of a harsh family-planning crackdown in the Chinese countryside, the UN Population Fund is considering withdrawing from China and ending its work in the most populous country in the world. . . .

The principal reason for the discussion of withdrawal is recent evidence that for the last two years China has engaged in a major crackdown to force couples to restrict the number of children they have. Peasants say the authorities routinely swoop down on villages and forcibly sterilize women who have filled their "quota" of one or two births.

The United States has refused to contribute to any of the fund's activities worldwide because of its presence in China. . . . (Kristof 1993, page A1).

8. How does the wording of each news article provoke certain reactions from the reader?
9. What evidence in the first article indicates how important family planning is to the Chinese government?
10. Did your opinion about the slowing of China's birth rate change as you read the second article? If so, how?
11. What would be the advantages and disadvantages of UN withdrawal of its population programs in China?

You have seen that the policy of encouraging couples to have only one child was not enforced in minority regions, and it was not completely effective in rural areas. Almost immediately after the One-Child Policy was enacted in 1979, Communist leaders toughened the policy to coerce, or force, families to have fewer children. Officially, the Chinese government always insisted that participation in the family-planning program was voluntary. But there was soon plenty of evidence to show that the program was required and that people were coerced into following it. Couples that didn't use birth control methods were hounded by local party leaders and sometimes had their food and water rations cut. There were also widespread reports of women being forced to use contraceptive devices or to have abortions. By 1982, nearly all provinces had moved to forbid couples from having more than one child. Financial penalties were strict enough to impoverish any couple that had a second child (Banister 1987).

Not surprisingly, the One-Child Policy became extremely unpopular. In 1984, China's government modified the policy. Coercion was officially discouraged, but local Communist party leaders were still expected to meet family-planning goals. As a result, coercive measures continued in some provinces and localities. In other provinces, however, local party leaders no longer punished people who had two children (Hull and Yang 1991).

The Chinese government denies that it has used sterilizations or other measures to force people to follow the One-Child Policy. But data showing the ratio of boys to girls born in China show that something *did* go wrong since the policy began (Figure 10 on page 45). The number of girl babies has declined severely in China since about 1980. How could this happen?

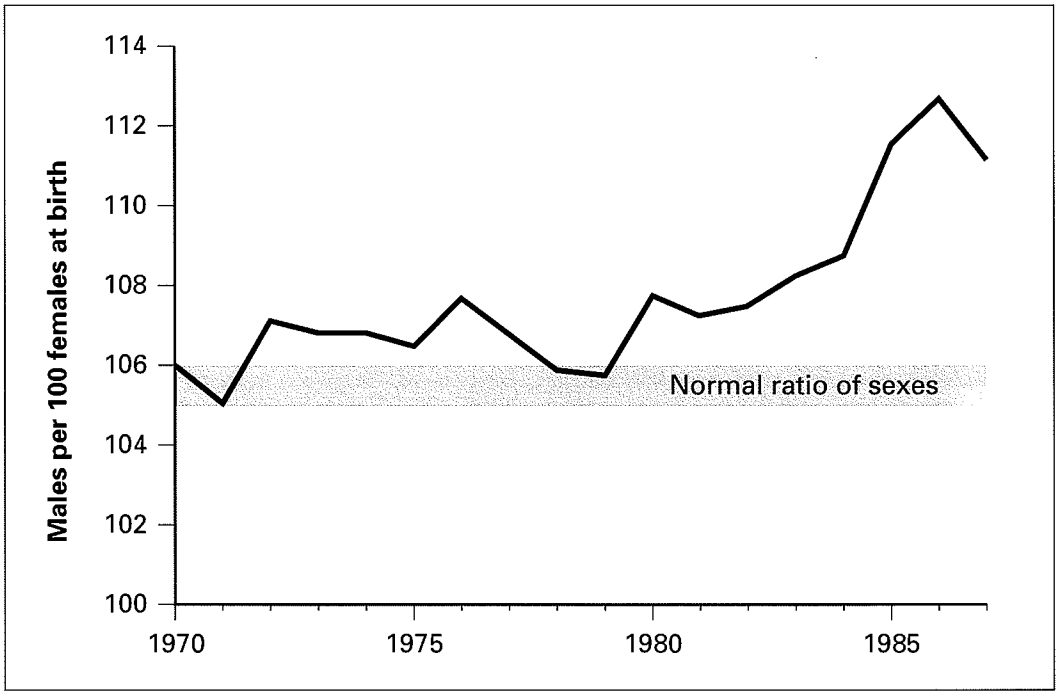


Figure 10 Ratio of boys to girls born in China, 1970–1987.

Source: Johansson and Nygren 1991.

In nearly all populations, 105 or 106 male babies are born for each 100 female babies. The presumption is that most, if not all, deviations above this level in China could indicate excess female [deaths]—whether from overt infanticide or the abandonment of female babies—or simply the failure of parents to report female births. . . . This evidence implies that more boys than normal were reported; or to put it negatively, as many as 500,000 girls were "missing" on the average each year from 1985 to 1987 (Yuan Tien et al. 1992, page 15).

An "ideal" Chinese family: mother, father, and son.

12. How do the data in Figure 10 support the idea in the quote from Yuan Tien et al. that girls are "missing"?
13. Why would Chinese parents murder, abandon, or fail to report their girl babies, as is mentioned in the quote?
14. What measures could be taken to decrease the number of "missing" girls?

How will China manage its population growth in the future?

In 1979, when China started the One-Child Policy, its leaders established a goal of keeping the population under 1.2 billion by the year 2000. As a result of the strong measures introduced to control population, China's birth rate dropped in the early 1980s to as low as 19 births per 1,000 population. But by 1987, the birth rate was back up to 21 per 1,000—and the trend toward higher rates was getting stronger. Keep in mind that the birth rate rose while China was trying to reduce family size.

Chinese officials changed their population goal from "not to exceed" 1.2 billion by the year 2000 to "around" 1.2 billion. This was a recognition that absolute growth would be higher than hoped. Why? As was mentioned earlier in this lesson, cultural traditions for large families are very hard to overcome, even with an authoritarian government.

Another important factor influences absolute growth—the number of women entering their childbearing years. Even if, on the average, women are having fewer children, if there are *more* women of childbearing age having children, then the birth rate (and population) must go up.

One way to predict the number of women who might bear children is by using a graph known as a *population pyramid* (Figure 11 below). In a population pyramid, the total population is divided by sex and by age group. This makes it possible to quickly estimate how many women will be entering their childbearing years (ages 15 to 49) at any point in the future.

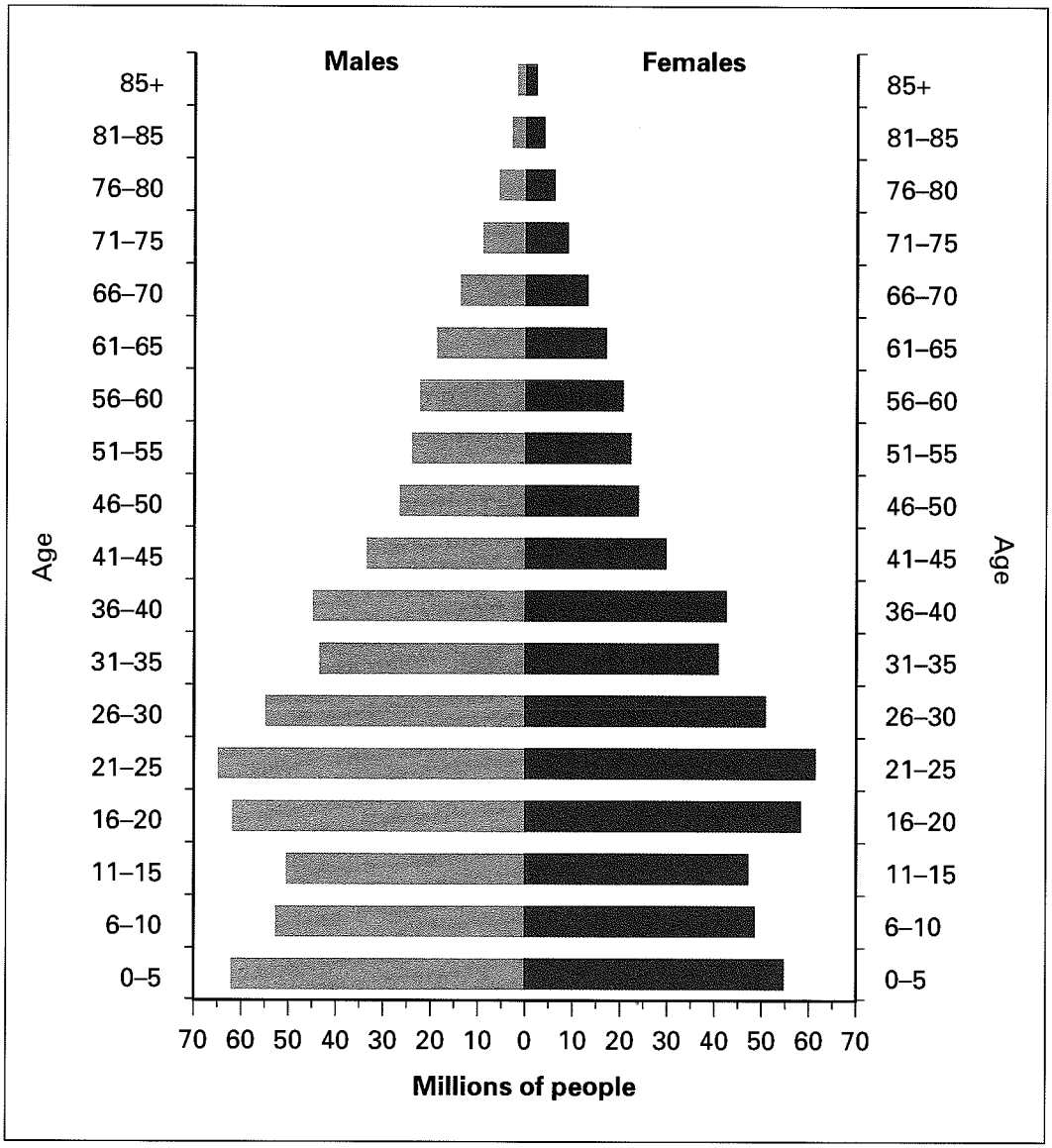


Figure 11 Population pyramid, showing China's population by age and sex, 1990.

Source: Yuan Tien et al. 1992.

15. About how many Chinese women were in their childbearing years in 1990?

16. How many women of childbearing age will there be in the year 2000? What can you predict about birth rates in China in the near future?

17. What can you predict about China's goal to keep its population around 1.2 billion by the year 2000?

China's government continues to modify its population-management strategy. The goal is to address the reasons why people have many children. Do you think the plan outlined in the following quote might be effective? Why or why not?

> The government . . . is now putting more emphasis on elevating the status of women, providing old-age security, and improving family planning and maternal-child health services (World Resources Institute 1994, page 62).

What is Kenya doing about its population-growth problem?

Objectives

In this lesson, you will

- Understand the reasons for Kenya's rapid population growth.
- Assess policies for managing population growth in Kenya.

Glossary Words

birth rate
death rate
fertility rate
gross national product (GNP)
natural increase

Why is Kenya's population growing so fast?

Not all developing countries have lowered their fertility rate as much as China has. African countries south of the Sahara have some of the highest rates of natural increase in the world (Figure 2 on page 8). These countries are grappling with the problem of reducing their high fertility rates.

The East African nation of Kenya is one of the world's fastest-growing countries. In 1972, its population was estimated to be just over 12 million. By 1993, it had almost 28 million people (*World Almanac* 1974; Population Reference Bureau 1993).

Although Kenya's total population may not seem large, its rate of natural increase is among the world's highest. Trends in Kenya's population are shown in Table 8 on page 50. At present growth rates, Kenya's population would double again in just 19 years, and over 61 million people would live in Kenya in 2025—in a country smaller than the state of Texas (Population Reference Bureau 1993).

Table 8 Selected population data for Kenya, 1948–1993

Year	Birth rate	Death rate	Fertility rate	Natural increase
1948	50	25	6.2	2.5
1962	50	19	6.8	3.0
1969	50	17	7.6	3.3
1979	54	14	7.9	3.8
1987	52	13	8.0	3.9
1993	45	9	6.5	3.7

Sources: Ominde 1988; Mott and Mott 1980; Population Reference Bureau 1993.

1. China's rate of natural increase in 1993 was 1.2 percent. What factor shown in Table 8 explains why Kenya's rate was so much higher?
2. At what stage of the Demographic Transition model is Kenya?

Although its fertility rate has declined rapidly since 1987 (Table 8), Kenya still has one of the world's highest fertility rates. Why have Kenyan women traditionally had so many children? To get an idea, read what Mawanishi Kingi, a 40-year-old woman who lives in a Kenyan village, said about her life and children:

> My mother and father were small farmers. My mother had four children and I was the last. I wanted very much to go to school but my father refused. He did not value education for girls; he was very keen for us to get married early. I was married at around 20, to a relative.
>
> I wanted to have many children. I didn't know the dangers of having too many. My husband was the same. In our community,

children are regarded as wealth. For the girls, when they get married, the person who marries them has to pay a dowry [a gift of money or property], so that is wealth coming into the family. For the boys, if they get jobs somewhere and they are [all] paid; this is also regarded as wealth. So the more children you have, the more wealthy you are regarded in the community (International Planned Parenthood Federation 1988, page 7).

What problems does rapid population growth pose for Kenya?

Like many Kenyans, Mrs. Kingi faces many difficulties in raising her large family. She has had 12 children, three of whom died shortly after birth. Her nine surviving children range in age from 2 to 17 years old. Here is how she described the hardships she has in providing for her family:

> My main problem is feeding the children. Whatever I get is not enough. I have to do everything to feed them, either get the food from the farm or buy it. My husband doesn't have any income. He does not help me at all. . . .
>
> The other big problem that I have is that I can't afford to send them to school. They were chased out of the school two years ago because I couldn't pay. . . .
>
> I am unable to clothe them; I haven't bought any clothes for over two years. Even for myself, I have to borrow clothes from my own mother because I don't have any (International Planned Parenthood Federation 1988, pages 7–8).

Many of the problems that large families have in Kenya are related to the low standard of living in the country. Figure 12 on page 52 shows changes in three indicators of quality of life in Kenya during the time of its rapid population growth. Gross national product (GNP) per person measures the total economic value of goods and services in a country, divided by its population. Food production per person indicates the relative changes in a country's ability to feed itself. And population per physician shows the availability of health care. Similar data for the United States are shown for comparison. During this period, the population-growth rate of the United States was much slower than that of Kenya. Figure 13 on page 53 shows the population pyramid for Kenya as of 1990.

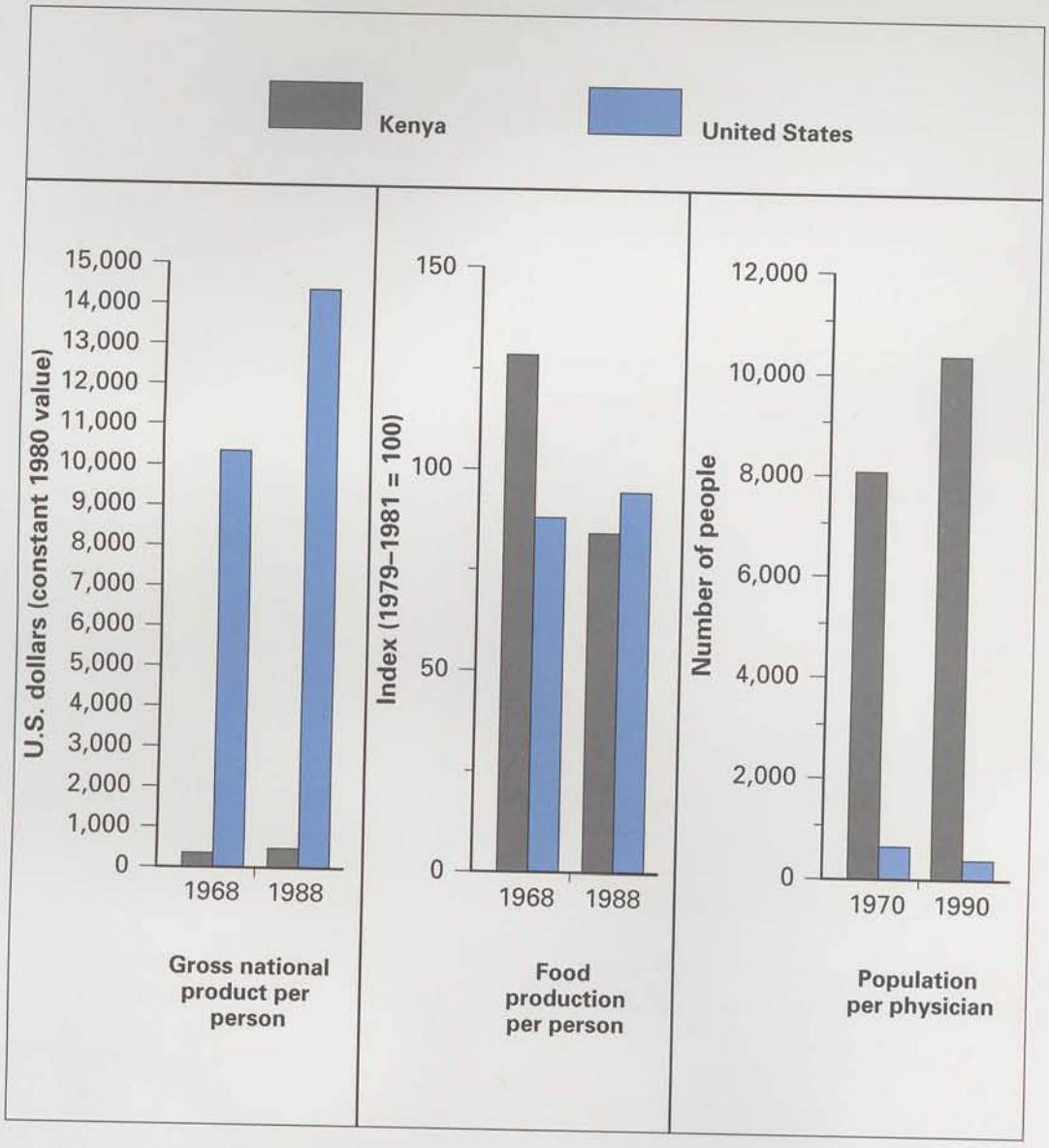


Figure 12 Trends in three indicators of quality of life, Kenya and the United States.

Sources: World Bank 1990; 1993.

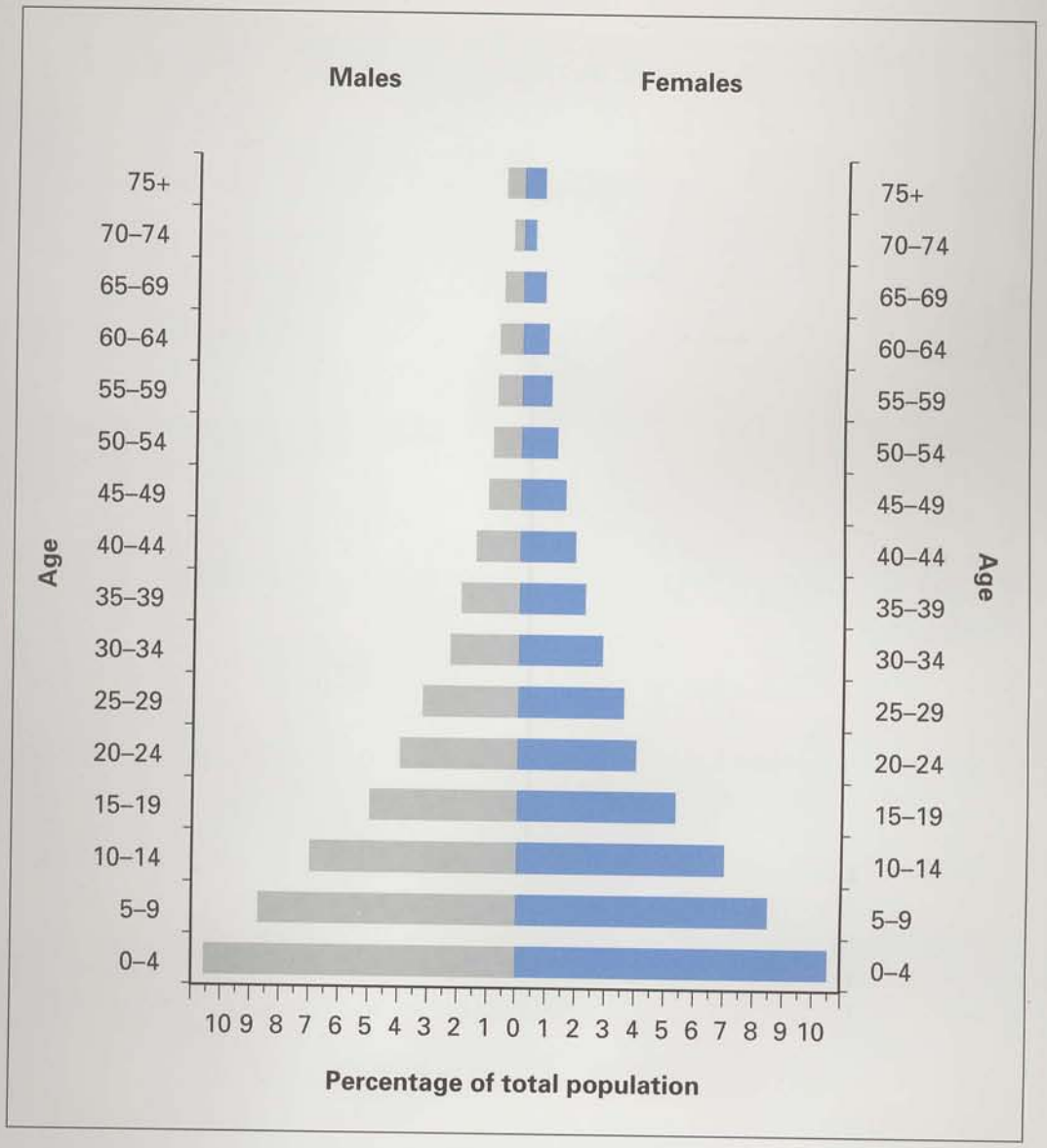


Figure 13 Population pyramid for Kenya, 1990.

Source: Crews and Cancellier 1991.

3. How do the trends in the three indicators shown in Figure 12 compare for Kenya and the United States?
4. How does the shape of Kenya's population pyramid (Figure 13) differ from China's (Figure 11 on page 47)?
5. What do Figures 12 and 13 indicate about the importance and future of managing population growth in Kenya?

What is Kenya's population-management policy?

In 1967, Kenya became the first African country south of the Sahara to adopt an official national family-planning program. The program called for two kinds of services: (1) family planning services and (2) maternal and child health services.

Family planning services emphasized education about contraception, family size, and spacing of children. In addition, contraceptive devices were made available on request. *Maternal and child health services* were meant to provide better health care to improve the survival of children and of women in childbirth. All of these services were voluntary. Individual and ethnic customs were fully respected (World Bank 1983).

The following extracts indicate that these programs appear to be working. The reason that Kenya's fertility rate has declined is partly because people's attitudes toward large families are gradually changing. Kenya now has cause to be optimistic about managing its population growth. The following quote is from Mrs. Kingi again, who at this time was using birth control to avoid having any more children:

> The first time that I heard about family planning was in the clinic. When we take the children for immunization or for child welfare, we are educated in family planning. . . .
>
> If I knew earlier, I would have started using family planning, but I didn't know. I thought having more children was the best thing. I didn't know that I was ruining my health and giving myself more problems.
>
> My husband also didn't like family planning at the beginning. He valued having many children, but now he realizes that it's important to plan the family so that we can be able to care for the children that we have (International Planned Parenthood Federation 1988, pages 16–17).

Rose Majanga is a mother of two small children who lives in a poor area of the capital, Nairobi. She began using birth control because she wants no more children. She explained why she has become part of what seems to be the trend toward having smaller families in Kenya:

> "I saw life ahead was hard," she says, as her three-year-old daughter, Maureen, peeks shyly out from behind a sheet hung to hide the bed from the tiny cooking and sitting area. "Food and clothing is hard [expensive]. When you are sick, it's too expensive. Life has become tight." . . .
>
> Mrs. Majanga is not alone. Final results of a nationwide survey by the Kenyan government are expected to [show] a 20 percent decline in fertility rates between 1988 and 1993. . . .
>
> "The message is, if it can happen in Kenya, it can happen anywhere," says Ayo Ajai, director of the Kenya office of the New York–based Population Council, a private organization. . . .
>
> Dr. Ajai and other experts cite a combination of forces that likely are having an effect: the worsening economy, increasing education of women, long-term [private] and government support of family planning, and an increase in contraceptives, services, and information to the public (Press 1994, pages 1, 4).

Life in a Nairobi housing project.

How does the United States manage its population growth?

Objectives

In this lesson, you will

- Understand the issues that have dominated U.S. immigration policy.
- Evaluate criteria for expanding, changing, or restricting U.S. immigration policy.

Glossary Words

immigration

quota

resident alien

How has the United States managed immigration?

In the United States, population growth has a different dimension than in Kenya or China. As you learned from Table 2 (Lesson 1 on page 11), the United States has a relatively low rate of natural increase, so the control of birth rates is not critical. Instead, U.S. population-management policies focus on immigration because fully one-third of U.S. population growth comes from immigration.

Government policies concerning immigration are a form of population management, similar to China's One-Child Policy.

This lesson asks you to review U.S. immigration policy. Which groups have been favored, and which groups have been kept out? What are some of the issues that have been raised in the process of determining immigration policy? At the end of this lesson, you will develop your own criteria for U.S. immigration policy.

The United States has always been a nation of immigrants, because about 99 percent of its population is not Native American. Since the television program "Roots" caught the imagination of the U.S. public in the 1970s, many people have traced their own roots. In that search they have found stories of their family's immigration to North America. Today the United States faces hard questions about immigration. The political cartoon in Figure 14 expresses some of these issues.

Figure 14 Political cartoon about U.S. immigration policy.

Source: John Trever, *Albuquerque Journal*, © 1981. Reprinted by permission.

1. What is the artist trying to say about current U.S. views on immigration?
2. How have immigrants defined U.S. culture?
3. Do you think people in the United States still believe in the ideals expressed by the Statue of Liberty? Why or why not?

Patterns of immigration to the United States have changed significantly in the latter part of the twentieth century. Figure 15 on page 59 shows the source regions of immigrants for five different time periods.

Immigrants to the United States take the oath of citizenship.

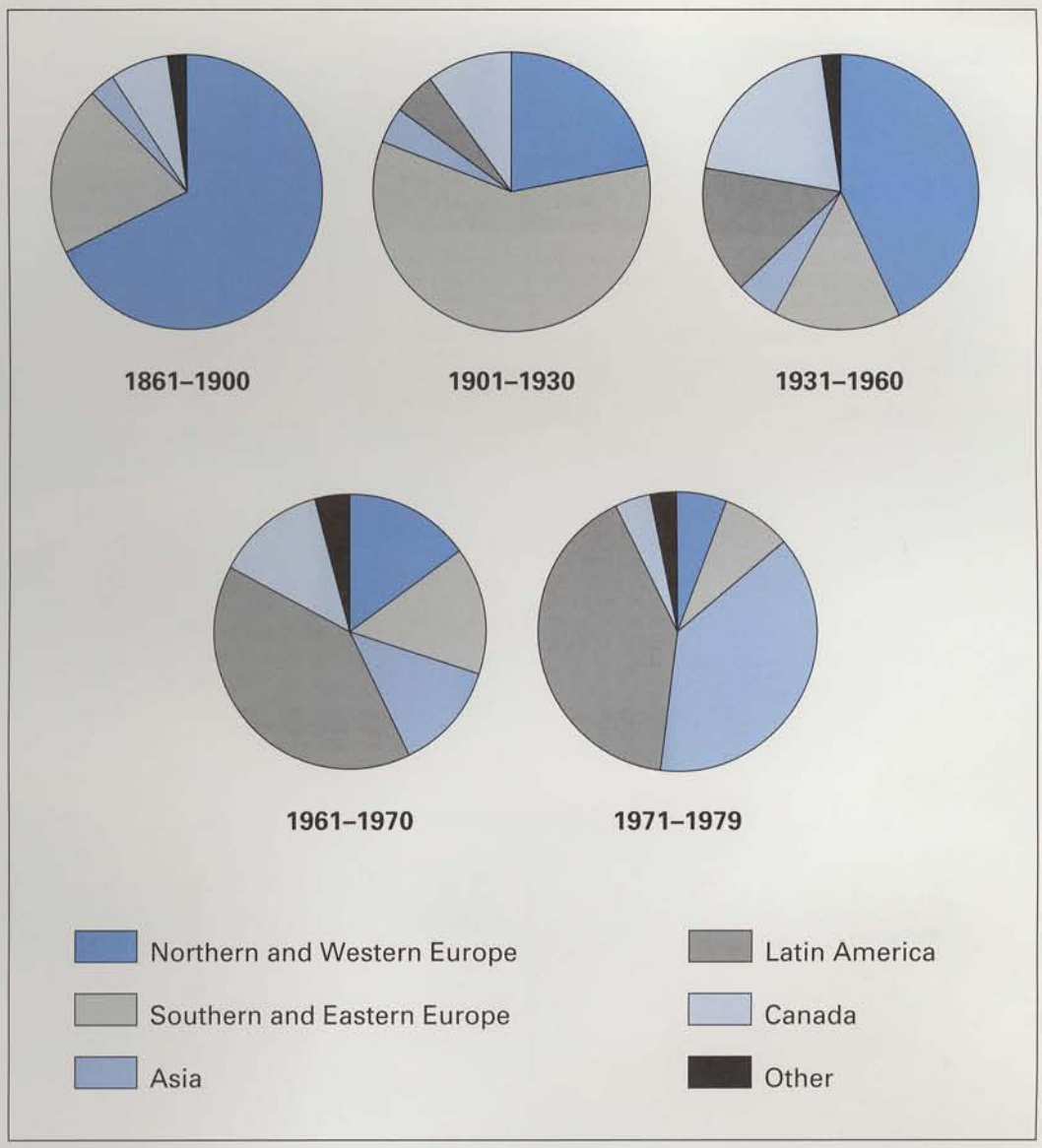


Figure 15 The changing patterns of immigration to the United States, 1860s to 1970s.

Source: Population Reference Bureau 1982.

4. What changes occurred in patterns of U.S. immigration between the late nineteenth century and the 1970s?
5. How have these changes affected the nature of U.S. society?
6. Do you think these changes have affected U.S. immigration policy? Explain.

A Brief History of U.S. Immigration Policy

- Before 1920, immigration had no formal limits. Laws were designed to limit specific groups (such as the Chinese Exclusion Act of 1882) or to address specific circumstances (such as protecting jobs for existing U.S. citizens). Immigration peaked during the first decade of the twentieth century, exceeding 1 million in some years.
- The Immigration Act of 1924 established the first broad quota system, limiting immigrants from countries to 2 percent of those nationals already in the United States as of 1890. Beginning in 1927, the quota year on which new immigration was based was changed from 1890 to 1920. The quota system limited overall immigration to 150,000 per year.
- The McCarren-Walter Act of 1952 retained the quota system based on the 1920 census. For the first time, the immigration policy included a quota for Asians.
- The Immigration Act of 1965 removed all quotas based on national origins. Immediate family members of U.S. citizens or resident aliens could be admitted without limit. Preference visas could be issued to other relatives, professionals, and company-sponsored workers. Preference visas were limited to 20,000 for each country per year.

7. What do you think was the purpose in 1924 of imposing a quota based on the number of people who had already come from a specific country?
8. What countries or regions do you think would have benefited from this national-origins quota? What regions would be limited?
9. How do you suppose immigration to the United States changed in 1965 when national quotas were essentially removed? Why?

Who should be admitted into the United States?

Two other immigration laws have been passed since the major change of 1965—one in 1986 and another in 1990. Both laws tinkered with the numbers and specific rules, but few people believe that either law will have a big impact on the immigration patterns as shown in Figure 15.

Laws still give strong preference to reunifying families over the admission of people with needed job skills. For example, in 1987, unlimited visas were given to immediate family members of people already in the United States. And about 80 percent of the preference visas went to other family members. This left only 20 percent of preference visas for professionals and company-sponsored workers.

Groups that argue for allowing more immigration tend to support this family reunification idea. They believe reunification is important, because families help new immigrants become accustomed to life in a new country. Groups supporting more immigration also argue that labor shortages will occur in a growing U.S. economy that has a declining birth rate. They say that it isn't essential that the United States admit only professionals and workers who provide needed skills. Historically, immigrants have taken jobs that existing U.S. citizens don't want. These groups cite California—where one-third of the country's immigrants live—as an example of an economy that is dependent on immigrant labor.

Groups opposing more immigration include some environmentalists and others who want to limit U.S. population. They believe that the quality of life in the United States will be lowered if large numbers of new immigrants are allowed. Others opposing immigration believe that allowing more immigrants would increase unemployment for existing citizens, at a time when many in the country don't have jobs. It is also argued that new immigrants would keep the wages of other workers low. These groups prefer to admit immigration of skilled workers, who fill jobs for which there are shortages of U.S. workers (Singer 1988; MacConnell 1988; Finch 1990).

Glossary

Absolute growth The actual increase in population over a given period of time.

Arable land Land that is suitable for agriculture, typically excluding areas such as marshes, steep mountains, and forests.

Birth rate The number of births in a year for each 1,000 people.

Death rate The number of deaths in a year for each 1,000 people.

Demographic Transition model A model of population changes that occur when countries transform from a rural, agricultural society into an urban, industrial society.

Desertification A process in which semi-arid grasslands turn into deserts, usually caused by a combination of livestock overgrazing, droughts, and/or climate changes.

Developed country A wealthy nation that has diverse industries, extensive transportation and communication systems, and mature financial institutions.

Developing country A poor nation that is emerging from an agricultural economy and that has the beginnings of industry, transportation, and communications.

Doubling time The time it takes for the population of a country to double.

Extended family A family structure that includes grandparents, parents, children, and possibly uncles, aunts, and cousins.

Fertility rate The average number of children a woman will have over the course of her childbearing years (usually considered to be ages 15–49).

Gross national product (GNP) The economic value of all goods and services produced by a country for a specified period of time, usually a year.

Immigration The movement of people from one country into another, with the intention of settling permanently.

Infanticide The murder of infants.

Migration A change in residence that is intended to be permanent, usually referring to movement between countries.

Natural increase The difference between the number of births and the number of deaths each year. This difference does not account for immigration. The rate of natural increase is usually shown as a percentage.

Nuclear family A family structure of parents and their children.

Overpopulation A condition in which the number of people in an area exceeds the availability of one or more essential resources to support them.

Population pyramid A graph in which a country's total population is divided by sex and by age group.

Quota When used in reference to immigration policy, the maximum number of persons from a specific country or group that may be admitted.

Resident alien A foreign citizen who has been granted lawful permission to live in another country without becoming a citizen of it.

Subsistence agriculture A farming system in which a family produces enough to feed itself, producing little or no surplus for sale. This system differs from "commercial agriculture," in which surplus crops are sold for profit.

Water table The upper boundary of the groundwater zone. A drop in the water table indicates that groundwater resources are being depleted.

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Geographic Inquiry into Global Issues

POPULATION GROWTH

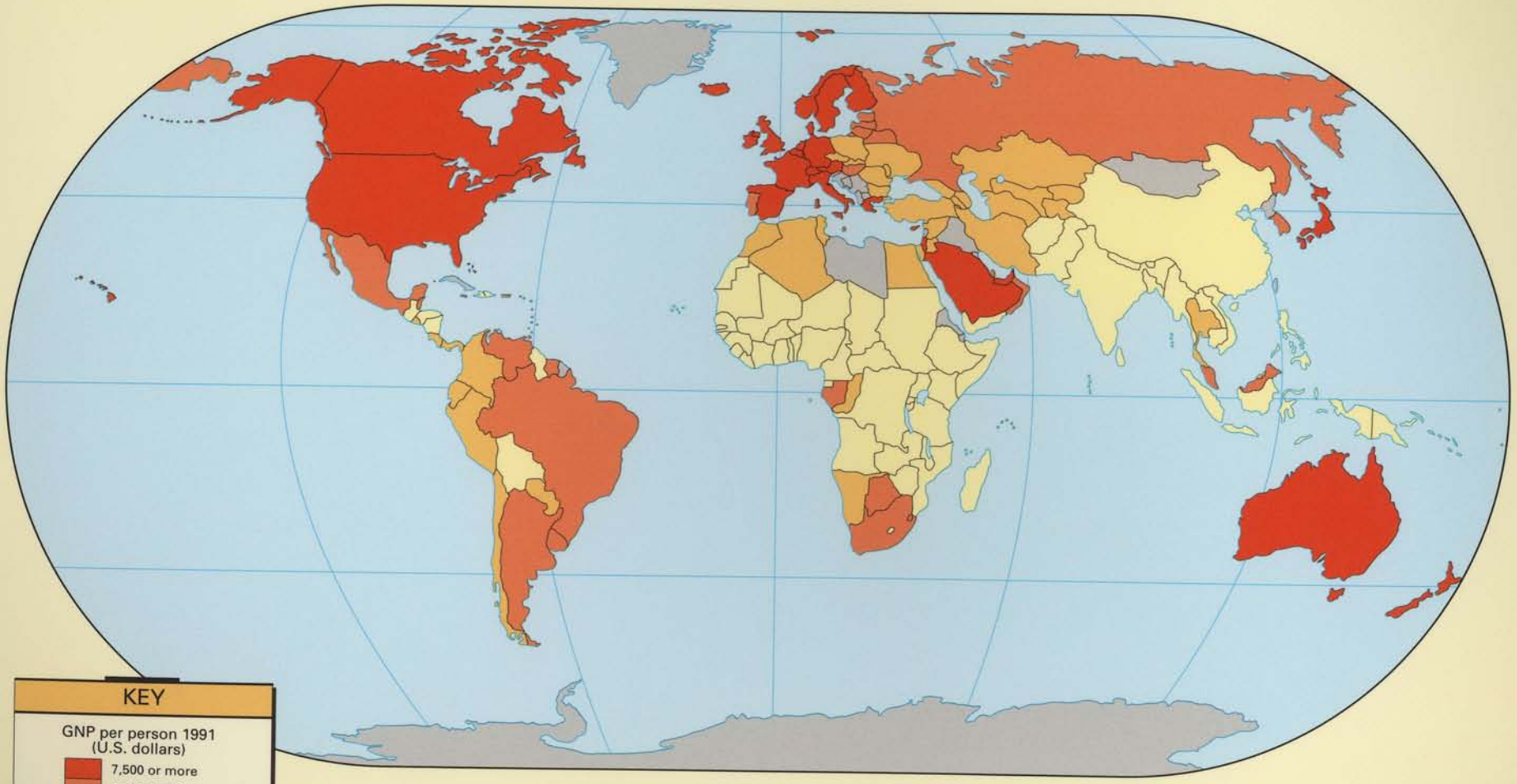
Map 1

MAJOR COUNTRIES OF THE WORLD

Map 2

Geographic Inquiry into Global Issues
POPULATION GROWTH

WORLD GNP PER PERSON



KEY

GNP per person 1991
(U.S. dollars)

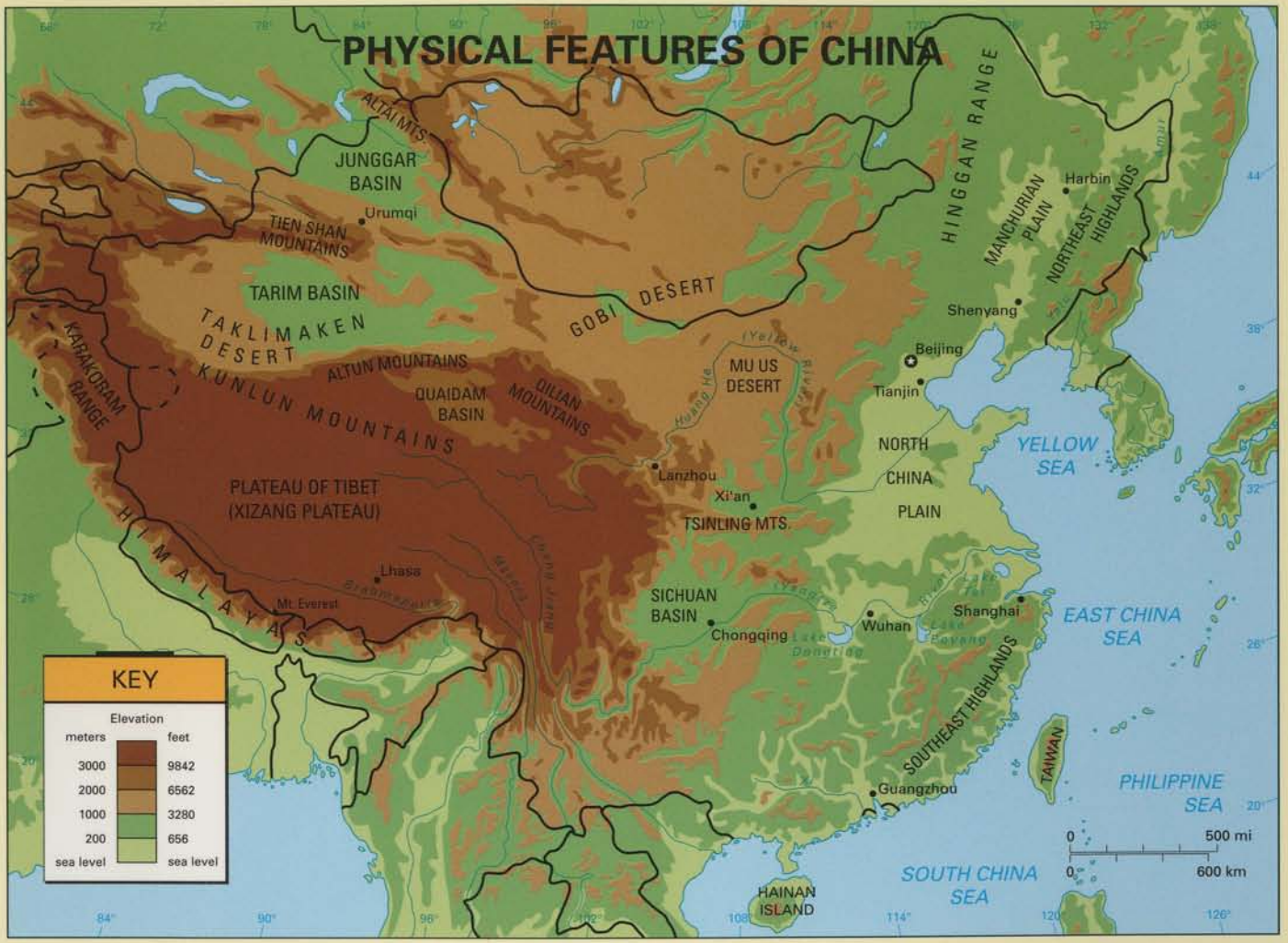
- 7,500 or more
- 2,500-7,499
- 1,000-2,499
- Less than 1,000
- No data

Source: World Bank 1993

Geographic Inquiry into Global Issues

POPULATION GROWTH

Map 3



Map 4