FAMILYSCAPE:
A BRIEF OVERVIEW

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FamilyScape is a cutting-edge policy simulation model of pregnancy and family formation. The model simulates the key antecedents of pregnancy (sexual activity, contraceptive use, and female fecundity) and many of its most important outcomes (e.g., childbearing within and outside of marriage, children's chances of being born into poverty, and abortion). Behaviors and outcomes of interest within the model are simulated at the individual level and are then summed across the simulation population in order to produce aggregate estimates of our phenomena of interest. The individuals within the model are heterogeneous – each of them is assigned a set of demographic and behavioral characteristics that help to govern the various decisions that they will make over the course of the simulation. We use a population of individuals whose gender, age, race, education, socioeconomic-status (SES), and marital-status profiles are consistent with the characteristics of the members of a nationally-representative dataset.

Figure 1 diagrams FamilyScape's overall structure and delineates the various stages of the simulation. During the first stage, we populate the model with a group of individuals whose demographic characteristics are nationally representative. In the second stage, opposite-sex relationships of varying duration are formed among some individuals. In the third stage, sexual activity (or lack thereof) is simulated among married and unmarried couples, and contraceptive use (or lack thereof) is simulated among couples who have sex. In the fourth stage, some sexually-active couples become pregnant, and each pregnancy eventually results either in a birth, a fetal loss, or an abortion. The model's fifth and final stage accounts for the fact that each birth is either to a married couple or to a single mother. A poverty status is also assigned to each newborn child during the model's final stage.

All of the model's inputs are constructed using the results of extensive analysis of several different data sources. These estimates are used to simulate the share of people who are married; the share of unmarried people who are in relationships; the rate at which married and unmarried couples have sex; the frequency with which sexually-active couples use contraception; the types of contraception that they use; the frequency with which couples using various types of contraception become pregnant; the share of pregnancies that result in live births, fetal losses, and abortions; the typical gestation periods for each of these pregnancy outcomes; the share of live births that occur within and outside of marriage; and the share of births that occur within and outside of poverty.

FamilyScape is designed to produce realistic variation in these dynamics according to individuals' demographic characteristics.
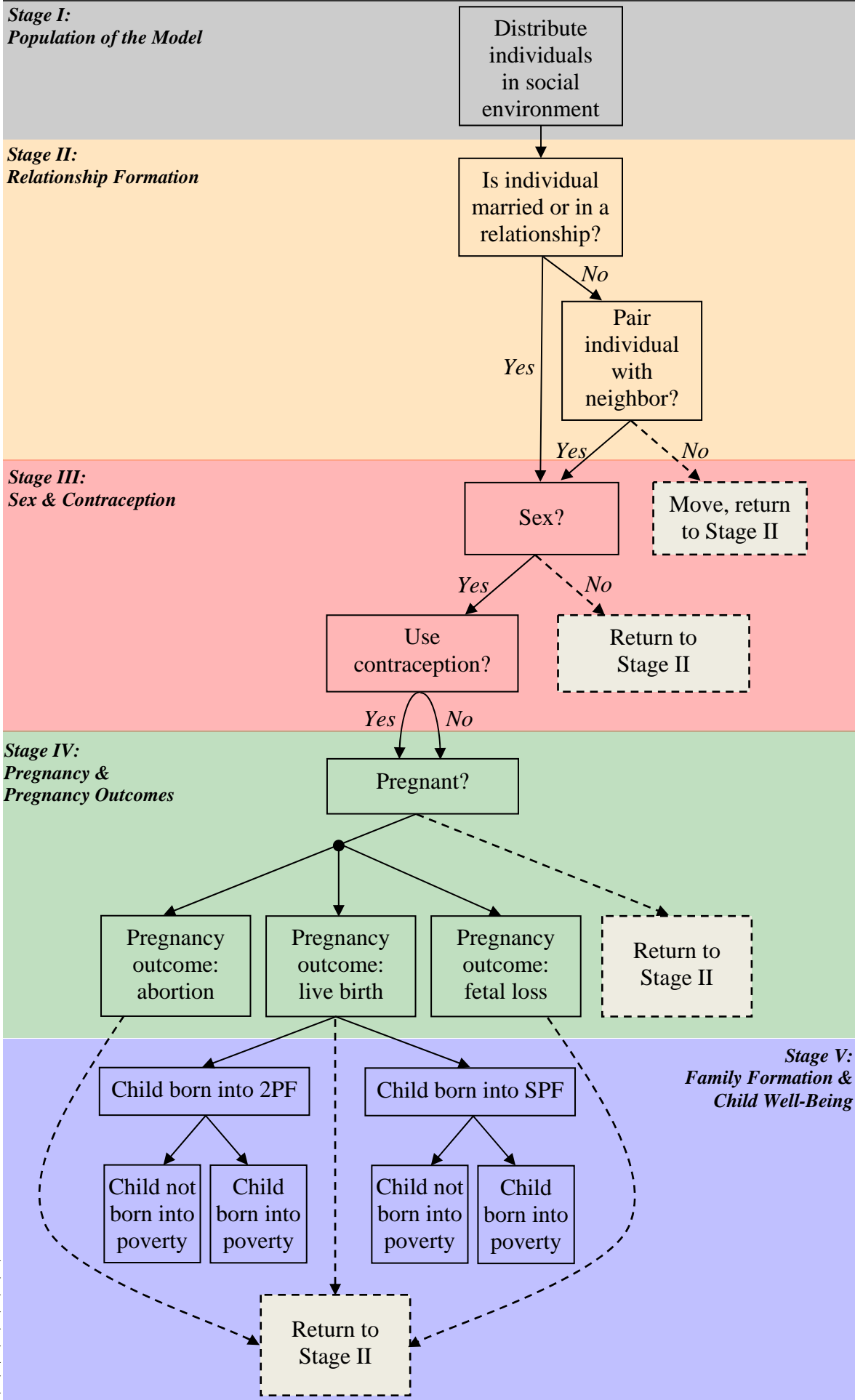
The model is validated by comparing its outputs (rates of pregnancy among teens and adults, the incidence of childbearing within and outside of marriage, the frequency of abortion, etc.) to the equivalent real-world data. It generally performs well in this regard, especially for the unmarried population. FamilyScape lends itself readily to policy simulations, since its inputs can be changed relatively easily under the assumption that a given intervention has a particular effect on individual behavior. Basic construction of the first release of the model has been completed, and it is now being applied to a broad array of policy analyses.

For additional information about FamilyScape, see:

Thomas, Adam and Emily Monea. *FamilyScape: A Simulation Model of Family Formation*. Brookings Institution Center on Children and Families Technical Paper. Washington, D.C.: The Brookings Institution, 2009.

A copy of the paper is available upon request by emailing athomas@brookings.edu.

Figure 1: Summary Diagram of FamilyScape Simulation Model

Stage I:
Population of the Model

Distribute individuals in social environment

Stage II:
Relationship Formation

Is individual married or in a relationship?

No → Pair individual with neighbor?

Yes

Pair individual with neighbor? — *No* → Move, return to Stage II

Stage III:
Sex & Contraception

Yes → Sex?

Sex? — *No* → Return to Stage II

Yes → Use contraception?

Use contraception? *Yes* / *No* →

Stage IV:
Pregnancy & Pregnancy Outcomes

Pregnant?

Pregnant? → Return to Stage II

Pregnancy outcome: abortion

Pregnancy outcome: live birth

Pregnancy outcome: fetal loss

Stage V:
Family Formation & Child Well-Being

Child born into 2PF

Child born into SPF

Child not born into poverty

Child born into poverty

Child not born into poverty

Child born into poverty

Return to Stage II

Marriage, Divorce, and Break-Ups:
At any point in the simulation, unmarried couples may marry or break up and married couples may divorce.

Demographic Variation:
Most behaviors and outcomes vary by sex, age, race, socioeconomic status, educational attainment, and marital status.