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The High-Risk Pregnancy in Two Americas: A Comparative Ethnography

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The High-Risk Pregnancy in Two Americas:
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by

Eleni Skaperdas

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ABSTRACT OF THE DISSERTATION

The High-Risk Pregnancy in Two Americas:
A Comparative Ethnography
by
Eleni Skaperdas
Doctor of Philosophy in Sociology
University of California, Los Angeles, 2023
Professor Hannah Louis Landecker, Co-Chair
Professor Stefan Timmermans, Co-Chair

Master Abstract: This dissertation is a comparative ethnography of the life and worlds of the high-risk pregnancy when wealthy and poor in Los Angeles, California. The study design is a case comparison of high-risk pregnancy and prenatal care at the extreme ends of the socioeconomic hierarchy: my field sites are "the Boutique," a private high-risk prenatal treatment center catering to upper and upper middle-class clientele, and "the Satellite," providing a "one-stop shop" for publicly insured pregnant women. The comparison controls for health care provider orientation and training, as a rotating cast of physicians practice at both field sites. I find the biomedical classification of the high-risk pregnancy hangs together through a disparate web of risk for the wealthy and poor, attended through different forms of care delivered across settings. Empirical findings examine the divergent ways risk is constructed or produced in clinic, the differing temporal natures of the high-risk pregnancy for the wealthy and poor, and the unintended consequences of cutting-edge technology within the setting of elite prenatal care. Although the base assumption is that privately purchased care means better care, I uncover a surprising finding—poor women receive comprehensive, holistic care that surpasses the sometimes fragmented and overmedicalized prenatal care wealthy women receive. Yet this better care also has a punitive aspect: poor women do not receive care that respects their privacy and always attends to how the broader socioeconomic landscape, rather than how individual behaviors, influences outcomes. Furthermore, the Satellite represents an island of comprehensive care within a treatment landscape defined by a lack of access and availability to high-risk prenatal care for the publicly insured. This study reveals that socioeconomic stratification produces distinct forms and procedures of the high-risk pregnancy, occupying differing realms of the biological and biomedical, economic, political, and social —and thus make up "two Americas."

The dissertation of Eleni Skaperdas is approved.

Rene Almeling

Jessica Collett

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University of California, Los Angeles

2023

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Acknowledgments

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Vita

EDUCATION

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Timmermans, S., Tietbohl, C. & Skaperdas, E. (2017). Narrating uncertainty: Variants of uncertain significance (VUS) in clinical exome sequencing. *BioSocieties, 12*(3), 439–458. https://doi.org/10.1057/s41292-016-0020-5.

Siple, J., Harris, E. A., Morey, J. M., Skaperdas, E., Weinberg, K. L., & Tuepker, A. (2015). Experiences of veterans with diabetes from shared medical appointments. *Federal practitioner: For the health care professionals of the VA, DoD, and PHS*, *32*(5), 40–45.

Skaperdas, E., Tuepker, A., Nicolaidis, C., Robb, J., Kansagara, D., Hickam, D. (2014) Congestive heart failure self-management among US veterans: The role of personal and professional advocates. *Patient education and counseling, 95,* 371-377. doi.org/10.1016/j.pec.2014.03.002.

Tuepker, A., Kansagara, D., Skaperdas, E., Nicolaidis, C., Joos, S., Alperin, M., & Hickam, D. (2014). "We've not gotten even close to what we want to do": A qualitative study of early patient-centered medical home implementation. *Journal of general internal medicine*, *29* (Suppl 2), S614–S622. https://doi.org/10.1007/s11606-013-2690-z.

Kansagara, D., Tuepker, A., Joos, S., Nicolaidis, C., Skaperdas, E., & Hickam, D. (2014). Getting performance metrics right: A qualitative study of staff experiences implementing and measuring practice transformation. *Journal of general internal medicine*, *29* (Suppl 2), S607–S613. https://doi.org/10.1007/s11606-013-2764-y.

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Department of Obstetrics and Gynecology, David Geffen School of Medicine at UCLA: "Qualitative health research in prenatal screening and diagnosis." August 13, 2018, Los Angeles, CA

UC Davis Qualitative Health Research Symposium, "In practice" panel: "Autonomy and consent in prenatal genetic testing: An ethnographic examination of reproductive choice." May 3, 2018, Davis, CA

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American Sociological Association Annual Meeting, Regular Session on Reproduction: Contextualizing Pregnancy and Parenting: "The high-risk pregnancy in two Americas," August 2020 (virtual)

American Sociological Association Annual Meeting, Regular Session on Reproduction: Social Dimensions of Reproductive Technologies: "The higher the risk the better the picture: When knowing more about your fetus means getting to know baby." August 2019, New York City, NY

Society for Maternal-Fetal Medicine Annual Meeting, Poster presented February 2019 by Dr. Christina Han "Cell-free Fetal DNA for aneuploidy screening: How much do patients understand?" Skaperdas, E., Reading, J.I., Arseniev-Koehler, A., Rao., R., Han, C., Platt, L.D. February 2019, Las Vegas, NV

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Chapter 1: The High-Risk Pregnancy

Zara, 36, stay-at-home mom

Zara's ring finger is crowded with diamonds—the largest measuring half an inch across. Her black sandals have diamond-encrusted Chanel insignias, and her nails are freshly painted bright pink. She is slender except for her 37-week belly. I chat with Zara while she's waiting for Dr. Merritt to do an ultrasound at "the Boutique," a high-risk pregnancy clinic in a wealthy zip code of Los Angeles.

Zara and her husband paid thousands of dollars for in vitro fertilization (IVF) and preimplantation genetic diagnosis (PGD) of her embryos. I ask her if she had trouble conceiving naturally. She waves her hand, saying, "No that's not it." She and her husband wanted to "balance out the family" with a boy after having two girls, and had PGD for "gene selection."

Dr. Merritt, a high-risk obstetrician, then walks into the exam room and remarks that Zara looks great. Dr. Merritt does an ultrasound scan using the latest 3D ultrasound technology. Her fetus is projected on a large LCD television screen in her line of sight, the outlines of her baby's pout enhanced by the flesh-toned coloring of the image, which she gazes at lovingly. The baby's head is down and Zara remarks, "Good boy!" Dr. Merritt checks the heartbeat and Zara tells her it "sounds like the police" since the sound resembles a thumping siren. Dr. Merritt tells her, "Everything looks good."

A member of Zara's family just passed away, the funeral is in San Diego, and she would like to go. Dr. Merritt is worried about Zara getting stuck in traffic so close to her due date and suggests flying and mentions, "Facetime is even better." Dr. Merritt tells Zara even though she has a due date "you can't predict when the baby is coming." Since this is her 3rd pregnancy, labor can happen quickly. Dr. Merritt explains that her due date does not necessarily mean that the doctors know when she will go into labor. Considering that her supernatural pregnancy is disciplined by state-of-the-art assisted reproductive technologies (ART), Zara is surprised that her due date is not the precise date that she will give birth.

Estrella, 34, in recovery

Fifteen minutes east of the clinic where I met Zara, I chat with Estrella before her appointment at a high-risk pregnancy clinic serving women on Medi-Cal ("The Satellite"). She is 36 weeks pregnant and identifies as Latina. Estrella has a history of preterm delivery, possible stroke, homelessness, history of substance abuse, and had a low vertical incision C-section during her last birth, a type of C-section that increases the chance of uterine rupture for her current pregnancy if she chooses a vaginal delivery. On her problem list is also "grandmultiparity," as she's been pregnant ten times, and has 4 children adopted by and living with her parents. The physician asks her a few basic questions about how she's feeling. He prescribes prenatal vitamins since Estrella tells him, "I lost them staying on the streets."

Estrella then brings up that she "signed for birth control"— to get a tubal litigation (sterilization) during delivery—that she does not actually want. The doctor assures her "anything you've previously signed isn't binding." He recounts that getting long-acting form of birth control such as an intrauterine device (IUD) compared to birth control pills is beneficial because "you don't have to take them every day." Estrella is not interested in an IUD, as she knows people that had one and "it moved around." The physician then asks her about her previous experience with the birth control shot. Estrella gets impatient, and clams up. The doctor iterates that they talk to women before delivery because during delivery they can put in an IUD. He points to a big poster on the exam room walls that has pictures and descriptions of all different kinds of birth control and summarizes her different options.

The physician gets out a disposable tape measure and measures her belly to check fetal growth. He then tries to check the heartbeat of the baby using a hand-held Doppler machine, but he can't get a read. Estrella is obese, and the Doppler machines have difficulty traversing through some women's bellies to get the baby's heartbeat. A medical student then brings in a small ultrasound machine and quickly does a scan to check for the heartbeat and reassures Estrella that everything is healthy, although she does not seem concerned.

A few days later I sit down with Estrella for an interview. She is living in a sober living home, after being kicked out of her last home and living on the streets while pregnant. Estrella is unsure who the father of her baby is. She tells me matter-of-factly that she was raped while also seeing someone at the time of conception.

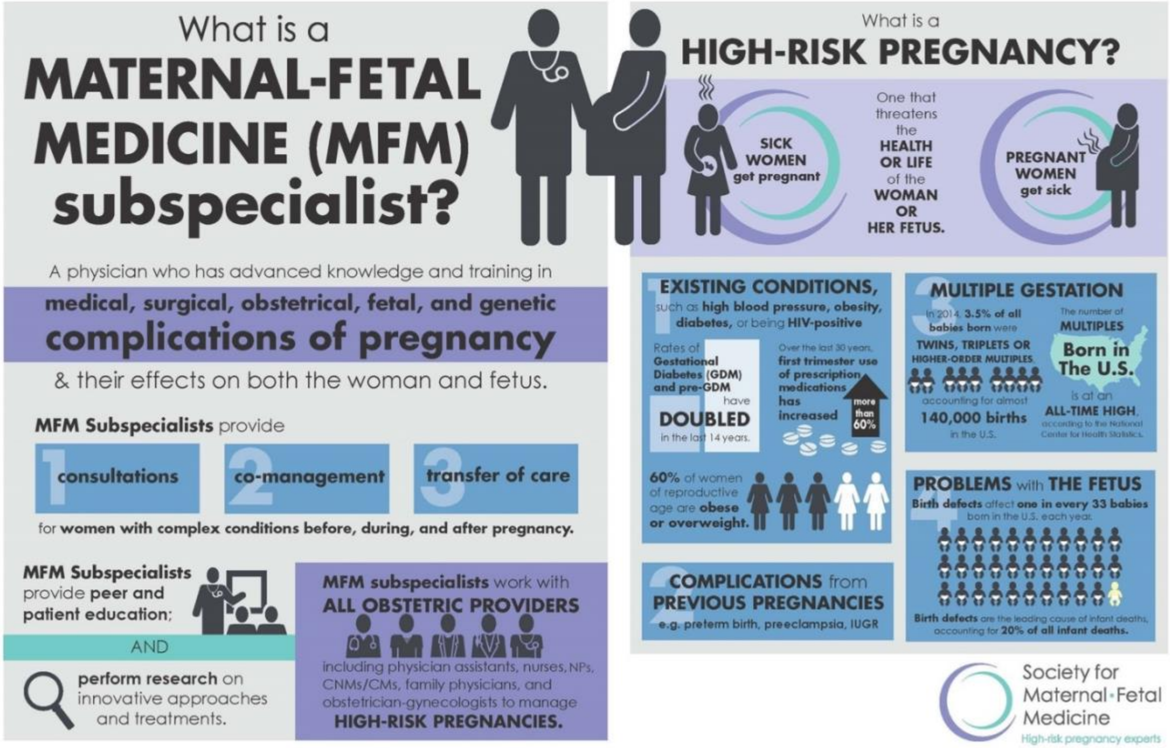
I. A Comparative Ethnography of the High-Risk Pregnancy

Through different mechanisms and in different contexts, Estrella's and Zara's pregnancies are classified as "high-risk." But what is a high-risk pregnancy? As a physician told me when I asked her, "It depends." In this dissertation, I will examine one overarching question: what does it mean to have a high-risk pregnancy when very poor and when very wealthy in Los Angeles? Although ostensibly a high-risk pregnancy is a biomedical state of being, in practice this category encompasses the molecular to the social—one where the fetus is assessed as having an increased risk of genetic anomaly through cutting-edge prenatal genetic screening, to a pregnancy where women have serious chronic or acute health problems and psychosocial difficulties that necessitate a focus on maternal health over fetal health.

Zara and Estrella both received care in specialized prenatal clinics, seeing maternal-fetal medicine (MFM) specialists (also called perinatologists, a subspecialty of OBGYN acting as consulting providers during high-risk pregnancy situations) throughout the course of their pregnancies. Zara received care at the Boutique because she is considered of "advanced maternal age" at 36, and using ART versus naturally conceiving puts her at greater risk of medical complications. Estrella was in a Medi-Cal clinic due to unstable housing, substance abuse issues, and risky past deliveries. Without Medi-Cal and access to the Satellite, she would not receive any prenatal care. Reflecting the different priorities of prenatal care and associated risks, these clinics have very different onsite resources. The Satellite has a birth control counselor and a social worker, while the private clinic has onsite genetic counseling and top-of-the-line fetal ultrasound.

Social observers term the differential valuing of reproduction across socioeconomic and racial categories through the concepts of "stratified reproduction" (Rapp, 2008) or a reproductive "caste" system (Roberts, 2005). Specifically, this stratification or caste system plays out in high-risk prenatal care and pregnancy through the sorting of risks or dangers for the poor versus the wealthy during reproduction. The infographic below details the different features of a pregnancy classified as "high-risk" according to the Society for Maternal-Fetal Medicine (SMFM):

Figure 1: Society for Maternal-Fetal Medicine Infographic of the High-Risk Pregnancy



Social dissection of the SMFM infographic above reveals that biomedical categorizations of a “high-risk” pregnancy, and therefore vulnerabilities to worsened childbirth outcomes, disproportionately affect low-income women. For example, the infographic outlines how 60% of women of reproductive age are obese or overweight. Low-income women are more likely to be obese than higher-income women, and women with a college degree are less likely to be obese (Ogden et al., 2010). Risk during pregnancy spirals easily—women that are obese have higher rates of gestational diabetes, preeclampsia, stillbirth, and shoulder dystocia (an emergency known as “the nightmare” of obstetricians where the baby’s shoulder gets stuck in the woman’s pelvis during birth), amongst other complications. In this seemingly unending spiral of risk—shoulder dystocia is frequently associated with infants born to women with diabetes (whether gestational or mellitus) and results in high rates of birth-related injuries to both mother and child (Politi et al., 2010).

A body of interdisciplinary scholarship further connects maternal poverty to worsened infant and childhood outcomes beyond individual risk. Research conducted by the California Department of Public Health associates neighborhood-level risks with indicators of maternal-child health. Findings suggest that lifelong residence in low versus high-income neighborhoods results in increased chance of low birth weight (English et al., 2003) as well as preterm birth (characterized by <37 weeks gestation), a main predictor of infant mortality and increased physical, mental, and neurological childhood disability (Pearl et al., 2018). And although I do not examine the racialized aspect of maternal-child health disparities in-depth in this dissertation, they are considerable. In California, rates of pre-term births were 8.1% to non-Latina white mothers, 9.1% to Latina mothers, versus 13.4% to Black mothers (Pearl et. al., 2018).

Pregnancies of advanced maternal age (AMA) are considered "high-risk," a risk associated more often with the wealthy. Yet the results of affluent yet older women's birth outcomes are nuanced. For example, research indicates that there are tradeoffs between advanced maternal age, childhood cognitive abilities, and infant mortality. While the age of the mother is positively correlated with higher cognitive abilities, rates of infant mortality also significantly increase when giving birth beyond 35 years of age (Cohen, 2014).

II. A Sociological Approach

The stakes of stratified reproduction are significant. Bioethicists note the vexed moral questions produced by access to technologies of gene testing and selection (Vanstone et al., 2014). And demographers consistently show the transmission of inequality from one generation to the next through childbearing practices (Sweeney & Raley, 2014). Yet little evidence exists about how real women experience high-risk pregnancy in unequal contexts. Here is where rigorous qualitative sociological research can provide an evidence base for policy, identify mechanisms contributing to the trends identified by demographers, and offer a “thick descriptive” context for more realistic bioethical theorization.

For much of this analysis, I adopted the biomedical category of high-risk pregnancy at face value, accepting this category of practice as a category of analysis (Brubaker & Cooper, 2000). I accepted biomedical definitions of high-risk as categorically meaningful in how I interpreted data. Yet we already have a biomedical understanding of high-risk pregnancy, mapped out in textbooks, disseminated through clinics and hospitals, informed by epidemiological analysis and medical research. My attempts to conduct a sociological analysis were thwarted when within the confines of a biomedical definition. Yet how can we use the high-risk pregnancy category of practice as a tool of sociological analysis?

Being labeled high-risk practically means women are the most comprehensively processed through the institutional assemblage of prenatal care during pregnancy. It was not uncommon for women in this study to have three medical appointments per week, therefore being the most heavily “touched” by the institutions of prenatal care and subjected to the highest form of intervention compared to their low-risk counterparts. Prenatal care means going through state processing (covering and guiding priorities of prenatal care), biomedical processing (delivering care), being subjected to market forces (a political economy of prenatal testing technologies), interwoven with social and cultural norms around pregnancy, family, and motherhood.

Through observation and in-depth interviews, I trace how prenatal experiences, choice, and risk are constructed in these drastically different worlds of life and care. I will specifically compare my ethnography of elite prenatal services for the wealthy with public prenatal care for the publicly insured poor. A comparative focus on “extreme cases” regarding social class will allow me to address a substantial gap in scholarship on American reproduction: that between interactional analyses of individual women's moral decision making (Rapp, 1999), on the one hand, and structural analyses of state intervention, racism, and eugenic constraints on reproduction (Roberts, 1997), on the other. Ethnographers interested in reproductive technology have typically studied insured women, while structural analysts have tended to focus on those whose reproduction is directly managed by the state, namely the poor and marginalized. I will integrate these approaches by empirically examining how various resources, technological differences across clinics, and differing relationships to the state and economic context enable and constrain women's high-risk reproduction across sites within a single city.

Given the resurgent political battles regarding access to reproductive services in the United States, an empirical examination of actual decision-making, its meaning, and its boundaries at opposite ends of the American reproductive hierarchy will bring a powerful evidence base to policy discussions that are often polemical and speculative. My aim is that this will help guide best practices in reproductive care and ethics, and also clarify whether some avenues of improvement lie beyond the clinicians' reach—in social structure, inequality, and therefore more broadly political solutions.

III. From Danger to Risk

The treatment and framing of pregnancy as risky is institutionalized within contemporary American reproduction. The industrialized genome has led to a flurry of genetic screening and testing technologies, resulting in a vibrant political economy of risk assessment within prenatal care. Risk calculations commodify the raw resource of certain uncertainty—or known unknowns—as risk (Dillon, 2008). Deemed a "new way of knowing," scholars call modern society a "risk society"—one in which strategically produced hazard probabilities (risks) create an inescapable cognitive condition dominated by a minimization of risk (Beck, 1996; Giddens, 1991). Although macro theorists attest to sweeping trends within a 'risk society,'—for example debating how risk assessments configure into political decision-making of the modern state (Innerarity, 2013)—within medicine and particularly pregnancy, risk is an embodied state rather than abstract calculation.

The American pregnancy is enmeshed within a grid of risk, for some even before prenatal testing even begins. Risks are vague and qualitative, encircling large groups of women. For example, the "high-risk" label trails those over thirty-five and of "advanced maternal age." Parents of Jewish descent are highly recommended to undergo specialized "Jewish panels" of genetic carrier testing.

Medical sociologists and anthropologists are critical of this discourse and the treatment of pregnancy as risky (Lupton, 1999), representing one of many examples of overmedicalized reproduction. And indeed, this dissertation extends this empirical literature in examining the hazards of overmedicalization in prenatal care. Possamei-Inessedy (2006) notes that pregnant women are continuously warned of the "invisible killers lurking in their ignorance", and therefore the least able to escape the "risk society." This is no more pronounced than within the realm of "high-risk" reproduction. Those that do not fit into these categories are considered "low risk," still defining pregnancy as an inherent risk state. Scholars note there is no such thing as a "no risk" pregnancy within western reproduction (Lupton, 1999).

As a young graduate student, I hungrily read through sociological and anthropological texts of reproduction. I was incensed by how a natural biological process had been pathologized, relegated to being treated as a proto illness by the biomedical establishment. It was a very different experience to be an observer of reproduction than to study it from afar. This is where my empirical examination of the high-risk pregnancy leads to a disconnect with literatures of reproduction—the lack of ethnographic, up-close investigation into the high-risk pregnancy has led to an important empirical point being left out when conducting a social analysis of reproduction: the medicalization of pregnancy is an achievement of epic proportions to curtailing the dangerous impact of pregnancy and childbirth on women's livelihood.

A discourse of risk surrounding pregnancy has made us lose sight of the dangers that lie beyond that risk. That a low-risk pregnancy exists as a category is an innovation only seen in high-income countries. On a global scale, epidemiological data demonstrates how pregnancy is life-threatening for poor women and risky for wealthy women. Although there are unintended negative consequences to framing and treating pregnancy as risky, I realized it obfuscates the mortal dangers underlying the process. Peeling back the risk-based discourse of pregnancy and childbirth leaves one staring at the life-threatening process of human reproduction.

An ethnography of the high-risk pregnancy is an up-close examination of the danger and potential suffering involved with pregnancy, and the distribution of this suffering amongst the pregnancies of the wealthy and poor. The maternal mortality ratio is the number of women who die from pregnancy-related causes while pregnant or within 42 days of pregnancy termination per 100,000 live births. In South Sudan, the risk of a woman dying in childbirth is one in seven. (Downloaded from https://ourworldindata.org/grapher/maternal-mortality-ratio-sdgs?tab=table). The maternal mortality ratio is drastically impacted by the wealth of a country—almost 100 times greater in high-income versus low-income countries. Although approximately steady for the past 30 years, the US maternal mortality rate from 1915 to 2007 went from 607.9 maternal deaths per 100,000 live births to 12.7. (Downloaded from https://www.hrsa.gov/sites/default/files/ourstories/mchb75th/mchb75maternalmortality.pdf)

Interventions responsible for the decline in maternal mortality include the introduction of prenatal care and hospitalized deliveries, antibiotics, blood transfusions, the management of preeclampsia and eclampsia (high blood pressure can be fatal during childbirth), and caesarian sections amongst others (Goldenburg & McClure, 2015). Collectively, these interventions into pregnancy and childbirth have led to a 99% decrease in maternal mortality in high-income compared to low-income countries, reflecting the ability of wealth to buttress against the dangers of pregnancy as on a global scale poor women are more likely to end up as mortality statistics.

Medical intervention has resulted in a significant decrease in infant and neonatal mortality; it's estimated that a lack of prenatal care is associated with a 40% increase in neonatal death (Vintzileos et al., 2002). Overall, maternal, fetal, and infant mortality in low-income countries maps onto the numbers of high-income countries 80-100 years ago (Goldenburg & McClure, 2002).

Although a biological event, human reproduction is as shaped by its social context—whether it be technology, social rituals, and economics—as it is by biology. And this biological event looks different depending on which America you examine. Just as the dangers of reproduction are stratified across high and low-income countries, the American wealth gap creates an unequal distribution of dangers as well. Epidemiological models take apart these different versions of Americas in sanitized language, through identifying what are "risk factors" and "protective factors" and associating these different variables with what they term "mortality" and "morbidity"—in other words, death and sickness. On a population level the numbers are clear to medical researchers and sociologists alike: wealth is health.

This dissertation highlights how the dangers of reproduction are deeply intertwined with economics.

IV: Clinic Background

The Boutique: Pushing the Limits of Technologically Mediated Reproduction

The field site I call the "Boutique" is a private maternal-fetal medicine clinic. The surrounding neighborhood consists of mansions with multiple luxury cars. To get to the clinic you walk through paneled glass doors into a multi-storied granite building, through gleaming marbled hallways and ride up mirrored empaneled elevators. Streets surrounding the clinic have "NO PARKING" signs except for those with residential permits. Although no formal structures surround the zip code of this clinic to keep people out of its bounds, the organizational landscape implicitly includes some while excluding others. This building houses medical offices serving the Los Angeles elite.

I started a project at the Boutique to examine social and ethical dimensions of a new prenatal testing technology. In line with other scholarship around such topics, I expected to uncover a complex web of moral, religious, and cultural reasons how women confront and interpret risk, and then make decisions to keep or terminate their pregnancy based on evaluation of such risk. A physician working at the clinic mentioned early on in data collection that I would eventually need to find another site to recruit participants, as the clientele was not representative of everyone.

Indeed, this was no ordinary socio-cultural web. As I sat in the clinic waiting room, I noticed the striking profile of the pregnant lady talking to the receptionist, complaining that her insurance had changed, and she didn't know what to do. The receptionist took her old and new insurance cards and warmly told her she would call the insurance companies to set everything straight. As this woman turned around, I realized she was the model ex-girlfriend of one of Hollywood's most famous actors.

These women's reproduction was not constrained or shaped by reproductive policy or health care reimbursement, but rather by market forces and personal wealth to control fertility to the limits of technological advancement. For example, Zara underwent in-vitro fertilization and genetic testing on her embryos prior to implantation not because of infertility, but for "gene selection" and to "balance" out her family of girls with a boy. Such assisted reproduction is not covered by insurance even for women that have pending infertility due to a diagnosis of cancer.

Women in the Boutique were on average older than 35 at their due date or had experienced complications during previous or current pregnancies warranting specialized observation with a MFM beyond routine prenatal care. Many attended top universities—35% had advanced degrees and 55% had college degrees. The majority of participants identified as white, with a minority identifying as Asian. Most women carefully planned their families during times in their lives when they had made it career-wise where they wanted to be and had the funds they deemed necessary to support a child.

The bread and butter of patients of the Boutique are "in the running" –not necessarily part of the top 1 percent, yet occupy economically comfortable lives and are part of the professional class. Many mentioned owning property of some kind, were highly educated, and had generous employment-related insurance. Lianne is 30 years old and was being seen after she went through fertility treatments, while her husband Scott is 41. They met working as occupational therapists for children with developmental disabilities. Each are making over $100,000 per year and during the interview were discussing whether they were going to sell Scott or Lianne's house, and which one to make their family home.

Some women found their way to the Boutique after spending all of their savings on fertility treatments. Carol was in her 40s, white, and a teacher in South Central Los Angeles. Her current pregnancy was thankfully going smoothly, following spending her life savings on fertility treatments. This small group of patients at the Boutique I call "a reach."

The Boutique also catered to both Los Angeles and global elites. Public figures of varying levels of fame found their way into the clinic. Others were CEOs or highly successful professionals. Others were the wives of wealthy men. Some patients arrived at the clinic paying cash for services to see physicians considered "the best" in Los Angeles, travelling significant distances for treatment. These women represented a slice of America that was very different than women treated at the Satellite.

Prenatal care looks different when driven by a for-profit health insurance system compared to resource-limited delivery of public care at the Satellite. A market-driven political economy of prenatal risk assessment encircles the high-risk pregnancy for the wealthy in Los Angeles. Prenatal care for the elite operates against the backdrop of a powerful techno-scientific marketplace resulting from coupling the free market with healthcare—building out the prenatal experiences and choices of wealthier patients.

The invisible hand of the marketplace is ethnographically apparent in the different materials used to treat the high-risk pregnancy across clinics, and the project of the Boutique is defined by pushing the limits of technologically mediated reproduction. The prenatal pathway of high-risk wealthy patients included the latest in ultrasound, such as lifelike overhaul of the black and white swirling fetal images iconic of the 2D ultrasounds. Newer ultrasound machines with 3D and 4D technology provide a flesh-toned peek into the womb in high-definition and in live motion. Invasive procedures such as amniocentesis and chorionic villus sampling (CVS) have another submicroscopic level of added analysis (DNA microarray) that test for abnormalities undetectable through conventional karyotyping.

New non-invasive tests, herein abbreviated as NIPT (Non-invasive prenatal testing) analyze fetal DNA fragments from maternal blood and offer far earlier detection than amniocentesis or CVS. Genetic carrier testing of parents offers panel screening for hundreds of rare and more common genetic anomalies, so parents know the risk of having an affected child based on their own genetic imprints. Before conception, women access assisted reproductive technologies such as in vitro fertilization, fertility-enhancing drugs, and genetic diagnosis of embryos before implantation.

This clinic is also a test-site for a large medical sonography company, providing cutting-edge fetal ultrasonography before public release, and a clinical trial site for new prenatal genetic screening and testing technologies. Exam rooms are fitted with large high-resolution television screens for the patients to see sonographers and physicians at work during ultrasounds. A high-ranking academic research center a few miles away does not use this technology or have these TV screens. The exam rooms were large and sleek, and as a researcher I easily fit into the space as an extra body. Set up as a special experience—women, their partners, and sometimes extended family members—were excited before appointments, waiting to "see" their baby onscreen. Unlike in the Satellite, most patients came with the fathers-to-be. Physicians and sonographers spend time during appointments getting "cute" pictures in addition to conducting necessary measurements on the fetus, printing the cute pictures and placing them in cards with teddy bears on them.

The Satellite: "A One-Stop Shop"

It is my first time observing a fetal ultrasound appointment at the Satellite, a low-income high-risk prenatal clinic associated with an academic medical center. A curtain divides the room from the rest of the clinic. There is a door, but the room is small, so it is never shut. The room is cluttered. There is a large bright red "biohazard" bin nestled in the corner. When doctors do a transvaginal ultrasound or vaginal exam, they physically move the heavy patient bed away from the wall, then move it back. The doctor must turn the ultrasound screen, remembering (which does not always happen) to show patients images. The patient lies down next to the machine and must crane her neck to see two-dimensional black and white images of her baby. There is not enough room for me to observe appointments if partners or other family members were present, yet it is unusual for women to come with family to appointments. Oftentimes the FOB (father of the baby), as they were called, was working, and physicians did not assume that the FOB was necessarily part of the picture. This was in stark contrast to the Boutique, where most women came to appointments with their partners.

The Satellite is the "best-care" scenario of publicly funded healthcare during pregnancy in Los Angeles. Overall, the resource limitations of the Satellite necessitate leveraging low-tech, high-yield interventions. A lot is happening at the Satellite parallel to providing comprehensive prenatal care. The staff does its best to treat these women medically, but also reaches beyond the medical, attempting to "treat" poverty. During this 9-month window of pregnancy and for 60 days postpartum, public insurance provides exceptional healthcare coverage. A "one-stop-shop" as one physician calls it for expectant mothers, the Satellite is a rare time in some patients' lives where they are plugged in to healthcare that in some cases surpasses that of private insurance. Once enrolled in the clinic, providers furiously work to not only provide prenatal care, but make sure women receive any overdue care ranging from providing visits to a nutritionist, social worker, visiting ophthalmology, or oftentimes "fitting in" patients on short notice to needed specialty services within the large academic medical center nearby on the same day they are there for prenatal care.

Women were in general younger than 35, and mostly Latinas, with a smaller Caucasian and African American demographic. Few women had more than a high school degree. As I speak with them about their prenatal care, few recall which prenatal tests they had or had not done, and most did not describe clinical interactions where testing options were spelled out to them. For the first few interviews I used the same interview guide I used at the Boutique, yet I realized that these women did not have much to say about the topics I was used to asking about. I therefore subsequently collected more open-ended interview data, and restructured the interview guide for the Satellite.

Providers used words to describe patients that I did not hear at the Boutique. Physicians talked about patients with "good health literacy" or not. An attending physician brought up the possibility that a diabetic patient that refused to track her blood sugars was possibly innumerate rather than simply "non-compliant," and mentioned to the residents that perhaps the issue was less simple than it seemed when she was refusing to manage diabetes. I was struck the first few weeks at the Satellite as words like "non-compliant" and "sterilization" jumped out at me in conversations between providers. Women's BMIs were much higher on average than those at the Boutique, with a larger percentage of women diagnosed with high blood pressure and gestational diabetes. As fetal monitoring technology is not primed to assess overweight or obese women, providers scrambled to accommodate ways of appraising "larger" patients' pregnancies.

Some women at the Satellite had "fallen on hard times." They carried with them some sort of capital, such as education or property, yet had reached a point in their lives where they had to depend on public insurance. Jess was in her early 30s and got pregnant at the same time a cancerous tumor was found, following a previous bout of cancer that had left her unable to work. With property she shared in Los Angeles and in the midst of building a career as a personal trainer, Jess was grateful she was able to access the Satellite.

The bulk of patients came from the working class, “making ends meet” yet still under the poverty line. Maya was a mother of 5, working as a paralegal at a law firm. With a one and a half hour commute each way, her salary of around $60,000 per year covered enough to keep her and her family afloat. Her husband did not work, as any additional household income would have disqualified them from public assistance and left them unable to pay all their bills.

The last group of patients seen at the Satellite were truly indigent, with little to no income, sometimes recently having experienced homelessness, or perhaps actively dealing with substance abuse, food, and housing insecurity, or all of the above. After years of living on the streets, Sara had gotten pregnant following a brief stay at a rehab facility. With a diagnosis of bipolar disorder, Sara remembers not wanting to live since childhood. She discovered heroin in her teens and has been on and off the streets since. She is currently enrolled in a methadone clinic and feels the pregnancy has changed her life and given her new meaning to get clean.

V: Dissertation Overview

My initial research questions when beginning graduate school focused on the social implications of new prenatal genetic testing technologies in high-risk prenatal treatment, a line of analysis that I followed throughout my time at the Boutique. Yet when beginning fieldwork at the Satellite I found that a comparative set of questions and findings that arose from the Boutique held little analytical weight when crossing the socioeconomic gradient into the Satellite. Rather, prenatal care concerns at the Satellite were focused on “treating poverty” through an assemblage of social services, specialized maternal care to “fill in” lifelong gaps in access to quality healthcare, and rising rates of complications related to metabolic disorders such as high blood pressure and diabetes.

Stepping back from a sole focus on cutting edge genomics, the overarching investigation of my research shifted to a sociological dissection of the high-risk pregnancy across the extreme ends of socioeconomic positioning in Los Angeles. From the beginning, it was clear that the high-risk pregnancy is entangled within a vastly differing web of risks when rich and poor. Although biomedically categorized as equivalent, wealthy and poor women experience high-risk pregnancies defined by different priorities, accessible resources and technologies, different reproductive choices— and they even operate within distinct timescapes.

Following a description of my methodology, Chapter 3 serves as a primer for understanding the main projects of the Boutique and Satellite. I illustrate how with enough prophylactic care to render maternal morbidities less prevalent at the Boutique combined with a regime of fetal testing technologies the focus is on “getting to know baby.” The Satellite, on the other hand, practices intensive mother management, with care focused on “getting to know mom.” Yet this is where we encounter an irony: getting to know baby at the Boutique through prenatal screening and diagnosis is really about controlling the risks of the pregnancy to the mom, while getting to know mom at the Satellite is about controlling the risks of the expectant mother to the baby. Namely, the clinic project at the Boutique of collecting information about the fetus goes hand-in-hand with providing an “informed choice” to women about whether they would like to terminate or keep a fetus with a detected anomaly. At the Satellite on the other hand, “getting to know mom” is brought full circle, as the underlying driver of care is organized “for the baby.”

Chapter 4 interfaces with the theme of temporality across clinics, exploring how divergent temporal sub-routines structure care across sites. The chapter examines how my disparate sites are empirically knitted together, as all pregnant women are processed through the structural apparatus of prenatal care. I examine how a temporal regime of prenatal care unfolds across the extremes of socioeconomic class, unveiling temporal asymmetry between the high-risk pregnancy when rich and poor. I use the term regime to connote the authoritarianism underlying the temporal rhythms of prenatal care, as healthcare providers draw on the vernacular of patient non-compliance to “mark” certain patients as not adherent to a rigid temporal order.

Chapter 5 illustrates an unintended consequence of state-of-the-art high-risk prenatal care at the Boutique. The chapter ethnographically demonstrates how the higher the risk a patient is, the more they are exposed to lifelike fetal images onscreen through high-resolution three- and four-dimensional ultrasound. As such, the social life of the fetus takes hold, and those at the highest risk of fetal demise, abnormalities or other complications are those that “get to know” their fetuses better than their lower-risk counterparts.

Chapter 2: Methodology

This dissertation draws primarily on participant observation and in-depth interviews. While quantitative methods powerfully document emerging trends and variable relationships regarding reproduction, this project aims to uncover *how* situations, regimes of technology, resource constraints, and structural locations affect prenatal norms, experiences, and decision-making. Thus, I use long-term observation of women in clinical settings, their everyday lives, and in interaction with state agencies to address the social mechanisms driving prenatal opportunities and choice.

Such observation delivers contextual and processual data that interviews or survey research often have difficulty accessing alone. I used in-depth interviews to determine how key actors interpret their situation, and how such meanings influence future action, filling in the gaps where my own interpretations of the field may be faulty. The comparative design here is crucial, for my observations and theorizations of each case will inform the other. I also stress that these are analytic cases, not only "sites"—the ethnography will go far beyond the clinic, to encompass different life-worlds of Los Angeles—a city deeply stratified by social class. This project received IRB approval in May of 2015.

I: Access and Positionality

Throughout this process, I have worn the dual hats of an applied health services researcher and sociologist. With a background in quantitative and qualitative assessment of health care services, I used these skills to gain access to my field sites and create a parallel, yet related line of research that I co-author with care providers across sites. This research is concerned with the social and ethical implications of implementing a new prenatal genetic screening technology into practice, using survey and interview methods. I am unofficially the project manager of a research team of medical students and doctors, and part of a maternal-fetal medicine research group. I manage collecting and analyzing data relevant to both the applied and theoretical, moving between implications for clinical care to how findings relate to our broader society.

Because of this duality, I eventually came to feel like just as much of a participant as an observer, as part of a team of researchers integrating my expertise as a social scientist into clinical change. Over the past few years, I have given as many talks to clinical audiences as I have to social scientists. Physicians I work with send me articles about medical "culture" they find interesting, refer patients to participate in my study that they have trouble connecting or communicating with, are complex cases emotionally, and sometimes look over to me during appointments when asking patients about what prenatal screening or testing they have had.

Ethically, I encountered sticky situations working with physicians as collaborators while also maintaining the confidentiality of patients I follow. I also feel caught between the critical stance taken by cultural ethnographers and the respect I have for my collaborators. With more time in the field, these internal dilemmas have dissipated. I view physicians as caught amongst powerful drivers, which Susan Kaufman outlines as "healthcare chains" beyond the exam room that dictate clinical care and script physician-patient interactions (Kaufman, 2015). Physicians themselves express a sense of powerlessness over these "healthcare chains," yet can't quite articulate the nuances of the binds they feel embedded within.

At odds with a social science perspective that considers biomedicine complicit in the geneticization of prenatal care, physicians discuss their worries over the "commercialization" of new prenatal tests, such as the heavy branding and marketing of the same prenatal screening coming from different labs competing for the market. They sometimes express distrust over results and talk about how the current landscape causes unnecessary anxiety for their patients with “runaway technologies” that slip into clinical care before being carefully assessed as beneficial to routine care. It is these thoughts and feelings that I believe opened providers to the collaboration I am building with them.

II. Data Collection

The Boutique

I started field work at the Boutique in June 2015. Initially, I spent 20 hours a week in the clinic over a 3-month period during which I observed forty clinical encounters. I then spent one year after this 3-month period returning to the clinic on a weekly basis, following cases that were of the highest risk. I also spent time every week at the clinic outside of clinical encounters to get a sense of the day-to-day operations and gain familiarity with the staff. I fielded surveys at the front desk for applied research, observing interactions between front-line staff and patients, and ate lunch with non-physician staff. After each day of observations, I wrote ethnographic field notes based on “jottings” I made of interactions (Emerson et. al., 2011).

I also conducted semi-structured interviews with fifty-three women, asking them about their demographic information, family life, social support, recent relationship history, care experiences within the clinic and outside the clinic during pregnancy, prenatal testing, and their subsequent decision-making. I conducted interviews in the clinic in a private room, over the phone, or in their homes. I recorded interviews and transcribed them verbatim. The following tables outline the data I collected from the Boutique, not taking into account the casual observations and conversations inherent to ethnography:

Table 1: Boutique Data Collection

Data	
Observations	75 clinical encounters
Interviews	-53 patients (some with partners) -1 Representative from Ultrasound company -1 Representative from genetic testing company

The Satellite

I started field work at the Satellite in October 2018. One day a week, the Satellite runs a specific clinic for high-risk pregnancies. On other days of the week, the clinic offers general OBGYN care to a Medi-Cal population. For the first few weeks, I observed clinic flow and discussions between providers about patients. The Satellite is organized as team based. All providers (including nurses and administrative staff) review cases every morning before clinic. By the third week, I started observing appointments, of which I have observed 22. I have interviewed 16 women at this clinic. I have followed ten of these sixteen patients for months at a time—observing their appointments, checking in with them about how they are and the latest news in their lives, and discussing their cases with providers. Most I have interviewed before or after appointments at the clinic in a private exam room, and a few over the phone. The data I am collecting from the Satellite is more longitudinal than what I collected from the Boutique.

Table 2: Satellite Data Collection

Data	
Observations	-22 clinical encounters -15 clinic meetings with all providers reviewing cases of the day
Interviews	-16 patients interviewed (10 interviewed at least twice, 5 spoke with/observed > than 3 times, followed over weeks/month, one with partner) -1 interview with Birth control Counselor

Key Informants

In addition to data collected at field sites, I conducted key informant interviews with various stakeholders over the course of field work. These interviews were open-ended, and each interview guide was specifically tailored to each participant. The following table reviews the key informant data collected:

Table 3: Key Informant Data

Data	
Disability Advocates for Down Syndrome	- 4 interviewed
Genetic Counselors	- 3 interviewed
Maternal-Fetal Medicine Specialists	- 2 interviewed

III: Data Analysis

Rather than using an inductive approach consistent with grounded theory in which themes are identified in the process of understanding the data, or a theoretical approach driven by predominant models or questions in the existing literature, I used abductive analysis (Timmermans & Tavory, 2012) to draw theory from my empirical cases. Abduction is an analytic approach situating surprising empirical findings within a theoretical frame, harnessing this unexpectedness to stretch existing theories or create new theories. Analysis of field notes and interviews began early and coding schemes were iteratively redefined to capture new themes and refine existing themes. Data were coded using Atlas.ti Mac (Version 22.9.1.3) qualitative data analysis software.

Chapter 3: Getting to Know Mom at the Satellite and Getting to Know Baby at the Boutique

What is a high-risk pregnancy when rich and poor in Los Angeles? How does wealth or lack thereof shape the priorities, medical care, and material nature of care for the high-risk pregnancy for the very wealthy and the very poor? This chapter introduces the divergent projects of my field sites: getting to know mom at the Satellite versus getting to know baby at the Boutique. Although both clinics are referral centers providing high-risk prenatal care, I outline the defining features of the high-risk pregnancy shaped at opposite ends of the socioeconomic hierarchy.

The general assumption is that women accessing generous employment-related insurance will have access to higher quality prenatal care than their publicly insured counterparts. Yet several doctors with experience delivering care across field sites iterated a general consensus that “low-income women have better care.” One physician mentions that care is “overmedicalized” for women of the Boutique and others on private insurance, and another that care for wealthier women is “fragmented” in comparison to the holistic care offered at the Satellite. A different doctor mentions that women at the Satellite have an easier time accessing psychiatric care during pregnancy than women on private insurance, whilst psychiatric issues are now the leading cause of maternal mortality in the United States (Troust et al., 2022). The social worker at the Satellite mentions that poor women are surveilled for signs of domestic violence as part of routine care, and that although domestic violence affects all, the same surveillance is not instituted for affluent women.

Satellite treatment provides a “one-stop shop” for expectant mothers, providing services that extend beyond prenatal care to “squeeze in” as much care as possible while poor women are plugged into high-risk prenatal care. Pregnancy provides a thoroughfare for the Satellite to provide as many services as possible to expectant mothers, with a focus on "getting to know mom" and a project of intensive mother management. Yet this wrap-around-care came at a cost: women at the Satellite experienced a total loss of privacy. Intensive mother management is defined by a no-holds-barred intrusiveness into personal aspects of their lives.

Within the context of an affluent America where women have prophylactic care and lifestyles to render maternal morbidities less prevalent than at the Satellite, high-risk prenatal care at the Boutique has the luxury of a fetal emphasis rather than a maternal focus that underlies care at the Satellite. Elite prenatal care converges around a fetal knowledge imperative—materially mediated by cutting-edge fetal genetics and obstetric ultrasound to extract as much information as possible about the developing fetus during pregnancy. Sociological investigation of the fetal knowledge imperative reveals an interlocking system of structural drivers, biomedical norms, and cultural scripts that set the stage for expectant mothers to "get to know baby" at the Boutique.

I. How Does the Knowing Begin?

I speak with Margaret, a 41-year-old Korean American property developer at the upscale boutique hotel she owns. Her current high-risk pregnancy is a continuation of her previous high-risk status. She was diagnosed with gestational diabetes, but most notably had a near loss of her pregnancy at 5 and a half months due to cervical funneling or weakness, where the weight of the fetus causes the cervix to begin to open prematurely, leaving Margaret at very high risk of pre-term birth and late-term miscarriage. Her cervical funneling was diagnosed during a routine ultrasound, and she went directly to the hospital to undergo surgery to receive a cerclage, or stitches in the cervix, to hold the fetus in her uterus. She delivered a healthy baby boy a few months later.

Margaret was followed from the start of her current pregnancy by high-risk obstetricians and received a cerclage at 14 weeks based on her medical history. This seamless flow from regular obstetrics (or low-risk status) to maternal-fetal medicine (high-risk treatment) through working referrals and responsive and anticipatory care to heightened risk was an expectation of women at the Boutique and was fulfilled throughout the course of my time at the field site. Women ended up at the Boutique through an extensive referral network throughout the larger metropolitan area following a by-the-book high-risk "trigger" while seeing their regular obstetrician (OB), whether it be through their use of Assisted Reproductive Technology (ART), previous miscarriages, or any number of complications during previous pregnancies, births, and current, that could justify high-risk treatment.

Maya from the Satellite is a 35-year-old Hispanic legal assistant and is also contending with a history of cervical weakness. Yet Maya did not receive a cerclage in time like her wealthier counterpart at the Boutique, leading to *two* heart-wrenching late term miscarriages due to cervical weakness. Before her first late-term miscarriage, her cervical weakness was not diagnosed in time by doctors to prevent losing the pregnancy. Before her most recent miscarriage, her doctors did not put in the cerclage in time even considering her previous late-term loss, leading to a miscarriage the same day she was able to get in to see a high-risk obstetrician.

Maya describes the frenzy that led up to her second miscarriage, as she was calling doctors to remind them she was in the "red area" considering her high-risk history. Maya's experiences led her to seek out care at the Satellite, feeling that the Satellite's affiliation with an academic medical center would prevent her heart-wrenching loss play out again. Yet even with her history, her referral to the Satellite was not guaranteed. She recounts her provider telling her, "Well, we'll put it in. The odds are you might not get in, but you might because of your condition." She had to advocate her case to her insurance company, repeatedly calling to make sure the referral went through for the Satellite.

Maya's horror story of negligent care combined with dedication to receive the best care possible through Satellite access were reoccurring themes when poor women talked about how they ended up in clinic. Many patients I spoke to such as Marcia, an African American woman in her mid-thirties, were motivated and determined to receive care at the Satellite following negative, and in some cases harrowing, experiences with prenatal care and childbirth. Marcia comments that care at the Satellite is "thorough" and in the past providers were "nonchalant." Marcia's eldest son was born with breathing issues and has been evaluated by a school psychiatrist as intellectually disabled, which she attributes to her childbirth experience. Perhaps because of not getting induced considering her son was late, Marcia delivered her son at 42 weeks, and as a newborn he breathed in meconium (fetal stool) and amniotic fluid. So-called meconium aspiration syndrome is a leading cause of newborn deaths, and post-maturity is a major risk factor (Chand et al., 2019). Marcia mentions "I could have sued but I didn't know" and receiving care at the Satellite is a strategy to mitigate the "nonchalant"—or negligent maternity care accessed previously.

Yet even with Satellite women attaining high-risk status and having a successful referral, there was still the long journey many made to receive care. Women's dedication, motivation, energy, and time were required to access Satellite care. I chat with Marcia for a bit before her appointment. She tells me she is "really tired" and was laying down the entire time we were talking. Her tiredness is partially chalked up to her difficulty getting physically to the clinic—she takes "two buses and a train" to get to the clinic since she "lives really far." I ask her where she lives, and I map the time it takes to get to the Satellite by car: 21 minutes. When discussing this case with the clinic manager, she commented "poverty sucks" and filed paperwork for the patient to have transportation assistance through rideshare. These were issues that were absent from the high-risk world of the Boutique.

Acting as a referral center for multiple counties for patients with highest-risk pregnancies on Medi-Cal, women living in rural areas often described hours-long drives to get to the Satellite. One patient I spoke briefly with tells me she left home with her husband at 5 am to be on time for a 10 am appointment. Twenty-one-year-old Rebecca travelled three and a half hours each way to get to her almost weekly appointments at the Satellite. Rebecca's fetus is diagnosed with gastroeschesis, a birth defect where the abdominal wall doesn't close fully, leaving the intestines outside of the body. When trying to find care that was physically closer, she mentions she was turned away as a "liability" for being too high-risk. Following an abusive past, foster care, and working to build a full and happy life, Rebecca was relieved to receive the far away, yet specialized care she accessed at the Satellite.

II. What is Being Known?

Getting to Know Baby at the Boutique

Elite prenatal care converges around a fetal knowledge imperative—materially mediated by cutting-edge fetal genetics and obstetric ultrasound—to extract as much information as possible about the developing fetus during pregnancy. Different technological vantage points of "getting to know baby" is the main activity at the Boutique. I use the term "getting to know baby" as a descriptor of the Boutique's project rather than "getting to know fetus" because the clinical process that biomedically scrutinizes also socially enlivens the fetus. Women have access to the latest innovations in prenatal testing, thereby enhancing the biological evaluation of the fetus with the social construction of a baby.

High-risk prenatal care at the Boutique meant receiving one of these multi-dimensional ultrasound scans for every appointment, even if just a quick check for fetal growth. In comparison, there was no television hooked up to the ultrasound machine in the Satellite and only 2D fetal imaging was used, and women had to crane their neck backwards to see the scan done by their doctors. These scans were also rationed at the Satellite, with discussions during team meetings on who could just have a regular OB appointment. During regular OB appointments, a tape measure was used to assess fetal growth rather than ultrasound.

Genetic testing at the Boutique also hit the ceiling on innovation, leading to a battery of fetal risk assessments that were unavailable at the Satellite. Invasive procedures such as amniocentesis and chorionic villus sampling (CVS) have an additional submicroscopic level of analysis (DNA microarray) that test for abnormalities undetectable through conventional karyotyping. Genetic carrier testing of both parents offers panel screening for hundreds of rare genetic anomalies so expectant mothers and their husbands receive fetal genetic risk profiles based on their own genetic imprints. Before conception, women accessed an array of ART technologies, such as in vitro fertilization, fertility-enhancing drugs, and genetic diagnosis of embryos before implantation in the womb.

One specific genetic screening contributed to the social construction of the fetus early in pregnancy through knowledge of sex. A blood screening, herein abbreviated as NIPT (Non-invasive prenatal testing) analyzes fetal DNA fragments through maternal blood. Along with NIPT, patients also found out the sex of their baby as soon as 9 weeks into pregnancy. By the first trimester, patients at the Boutique referred to their fetus as a “she” or a “he” far earlier than their counterparts at the Satellite, who mostly found out the sex of their baby through a 20-week ultrasound.

For some at the Boutique, pregnancy was the result of literal financial investment following the use of ART. For all, it was the result of a lifetime of preparation and planning until it was the magical moment when “it was time” to have children. This meticulous planning was followed by anxiety attached to every appointment, test, and scan where an imagined future of having “a trilingual baby” could crumble with bad news about the pregnancy. Very few women declined prenatal testing at the Boutique— I witnessed two isolated instances of refusal to have prenatal testing following the recommendation of doctors. Multiple women discussed their reasonings for having all prenatal screening and testing offered, and the refrain, “All you want is a healthy baby” came up repeatedly in interviews. Multiple physicians commented on how women at the Boutique are “very anxious” and “stressed,” just as the patient and her husband described below appeared.

I am sitting in the waiting room when I overhear a conversation between a patient and her husband at the Boutique. They both look anxious, and the patient is wondering if her baby is “deformed.” Both expectant parents are tense. Later on, I am observing their first trimester ultrasound scan. The patient is a well-dressed Portuguese lawyer in her late 30s, and her husband has impeccably shined shoes. While measuring different aspects of the fetus, Dr. Clark remarks “beautiful.” While explaining that he is measuring the humerus husband says, “Guess we are not missing it.” While seeing her fetus onscreen, the patient declares “it’s going be an international baby, already trilingual!” Like most women at the Boutique, economic resources were described as a “non-issue” when it came to their pregnancies, who willingly paid out of pocket for state-of-the-art care and testing if they could access more information about their fetus sooner. Dr. Clark recommends the patient wait one week for a screening so that California's public prenatal testing program covers the cost of the test. She waves her hand and nonchalantly and replied, "I'll just do it right now."

This led to a different flavor of investment than women had at the Satellite, who had an inherent trust in their bodies that was a foil to women at the Boutique's search for biomedically approved fetal health. Let's return to the stories of Maya and Margaret to fully explore this difference. As outlined in part one of this chapter, both Maya and Margaret were in need of cerclages during their pregnancies. Both women were recommended to have both non-invasive prenatal testing (NIPT) and invasive testing to confirm the health of the fetus prior to receiving the cerclage. Yet Margaret and Maya had very different views and experiences with this recommendation. For Margaret, there were no questions as to invasive testing being the "correct" next step in her prenatal treatment. Her response to the miscarriage rates associated with invasive testing was to seek out a specific provider at the Boutique for CVS, telling me, "I think the mother's responsibility at that point is to find the best provider possible to perform that procedure" when describing her approach to undergoing testing. Maya, on the other hand, mentions that she is the "first person to have it [CVS] done" within her social and family circle, mentioning that "anybody you talk to" will say not to have invasive testing because of the risk of miscarriage. Underlying her decision was coercion, as she recounts "no doctor would wanna do the cerclage" without normal CVS or amniocentesis results. Seeing herself in no position to refuse invasive testing she comments that without invasive testing she "wouldn't get the cerclage and I would end up having a miscarriage anyways" so she underwent invasive testing against her personal desires.

Getting to Know Mom at the Satellite

The driving interactional undercurrent of Satellite care was a frantic push for the clinical team to "get to know mom" as deeply as possible to "try to squeeze in care while you got them." I call this form of high-quality (although deeply intrusive) care "intensive mother management." Providers viewed the time women had at the Satellite as an opportunity to fit in as many services as possible considering the many risks at hand—such as risk of homelessness, domestic violence, and food insecurity, amongst treating the risks associated with inadequate access to healthcare such as getting one woman into neurological care for an untreated seizure disorder. Care provided at the Satellite extended far beyond healthcare. Beyond treating the high-risk pregnancy, the clinic provides treatment for poverty as well; staff helped get food on the table (gave out grocery gift cards), provided rides to and from appointments via Uber or Lyft, worked to get housing for some patients, and clinicians ask personal questions during appointments related to social, psychological, and economic risk amidst delivering clinical services. Rather than merely being treated for high-risk pregnancy, women were treated as high-risk patients overall.

First, let's re-establish how the different organizational set-up of prenatal care across sites may influence the comparison. As outlined in the clinic background for the Satellite, this clinic represents a "one-stop shop" for high-risk prenatal care. Women are referred out of the Satellite for non-pregnancy related health evaluations while being treated, such as for allergy consults and sleep studies. The Satellite functioned as primary care for the brief period of their pregnancy. When one patient had just received news during an ultrasound scan that she miscarried a fetus with a diagnosis of Down syndrome, her doctor reassures her of the availability of services when discussing her next steps: "We do full care, high risk, low risk, this is your home." This notion that the Satellite was a medical "home" for poor women was drastically different than the organization of high-risk care for the elite with a fetal focal point.

An early intake OB appointment at the Satellite reviewed basic medical information about pregnancy such as about contractions, vaginal bleeding, or headaches, and reviewed the history of all previous pregnancies. Rather than an extensive genetic workup women had at the Boutique, a medical student quickly asks about "family history" of medical problems. Yet alongside the medical history, the student asks, "Are you drinking, smoking, or using illicit drugs?" and asks whether the patient is working and how things are at home. The medical student is explicit when she introduces herself at the beginning of the appointment, and says that since this is her first appointment, "we are getting to know you."

Although "getting to know mom" was important for connecting women to the right services outside of the clinic, this was also a result of the site being a teaching site for physicians (ranging from medical students to sub-specialist fellows in training). Part of delivering care through a rotating case of students and doctors meant that before clinical treatment began each day, the staff and physicians discussed cases, some in-depth, and the necessary next steps in care for women, to make sure everyone was up to date on the "risks" that befell each patient that walked past the Satellite door.

Although it was unclear how much the Satellite could change women's "at-risk" living situations through the resources at hand, "getting to know mom" extended to attempts to ameliorate risk that went far beyond the context of the pregnancy. While presenting case notes about Charity, a mother of two in her 20s, the doctor comments that Charity has "a ton of problems" which included preeclampsia during both past pregnancies and PTSD. Yet also under the purview of high-risk care was a discussion about her family life—her mom adopted her current children, and the doctor mentions how motivated Charity is to improve her current situation ("she wants care, she wants help") and is "motivated to have custody" of her baby following birth. They discuss her current relationship: she has a partner that "hits her, abuses her" but they are "working on it" with the social worker to assure her safety.

Belen is 19 years old and is at the Satellite because she is a high-risk "teen pregnancy" as well as carrying monochorionic twins. Although any multiple pregnancy is considered riskier than singleton pregnancies, monochorionic twins are considered at the highest risk of morbidity and mortality compared to other types of twins as they share the same placenta, with increased likelihood of one twin receiving more blood and nutrients than the other (Trevett & Johnson, 2005). In the middle of a maternal-fetal medicine specialist scanning Belen, the physician asked, "How are things at home?" Finding out the patient lives with her in-laws, she then asked, "Do you get along with them?" In answering affirmatively, the physician carries on with checking fetal brain flow. In other appointments I observe with this patient, the same physician asks about her work situation and how that is going (she works in a doggy day-care), and how she is getting to and from appointments (uber), as well as the cost. In finding out that the patient pays only a few dollars for transportation, she drops the topic. The physician also asks her about education, gearing up to give a "talk" about the importance of education. Between the three appointments I observed between this patient-doctor dyad, in addition to assessing medical risks associated with her pregnancy, the physician also learned about the patient's living situation and how that was working for her, the way she got to and from the clinic, her relationship with her boyfriend and in-laws who she lived with, and how physically laborious her work is day-to-day. Discussion of the home lives of expectant mothers with the MFM physician (of note, highly specialized doctors) is just as much part of care as medical appraisal of the pregnancy.

Clinic staff referred to the "FOB," or father of the baby, when discussing each patient's case, addressing that although the FOBs are biologically responsible for the pregnancy, no assumptions are made as to whether the father is socially involved. It was not uncommon for staff to observe women's interactions with the FOB's, and comment on whether they seemed to be a reliable partner. One provider discussed how she "didn't get a good feeling" from one FOB of a patient enrolled in the study, while another mentioned that the patient's boyfriend was controlling. In these cases, providers were on the lookout for women in vulnerable positions and would alert the social worker if so. One physician across sites I spoke with notes that although domestic violence affects all women rich and poor, this was something providers at the Satellite looked out for yet disregarded in clinics treating the wealthy.

When comparing overall care between the Satellite and the Boutique one physician described the care at the Boutique and other privately insured high-risk clinics as "fragmented" relative to the holistic care at the Satellite (I spoke to five physicians that had worked across clinics). There was a running theme with physicians I spoke to that had worked across the Boutique and the Satellite, that "low-income women have better care." Another felt that private clinics like the Boutique "overmedicalized" pregnancy and created a lot of anxiety for patients. Yet even with these claims, I observed referrals not going through for women at the Satellite, such as to psychiatry or an obesity clinic. However, referrals not going through is an issue with private insurance as well.

Yet the holistic care at the Satellite came with a cost—the total loss of privacy and a sometimes shocking intrusiveness into women's private lives. Although this early intake appointment I described earlier does not seem any less invasive than a regular doctor's appointment, Satellite women experienced staff prodding women for personal information about their lives amidst their high-risk prenatal care. This "getting to know" was not optional and deeply invasive into women's lives. For women that were considered to be in dire situations, clinic involvement in "knowing" about mom was not optional. For example, one of the residents had told a patient that a social worker was coming, and the patient did not want to see her. The social worker humorously but seriously said, "Never tell them social work is coming. I just go in." This got the physicians chuckling. She said she gets around this by walking into a patient's room and announcing, "Hi, I'm [name of social worker], the social worker you don't want to see." She tells me patients feel "embarrassed" and open up to her.

"Getting to know mom" at the Satellite meant women's lives were invaded, and the concept of "privacy" for women at the Satellite did not exist. Women's behaviors, internal motivations, and sometimes checkered pasts were pieced apart alongside receiving care. This was apparent in larger and smaller ways. The door to the MFM ultrasound scanning room had a door, yet the door was never closed. Instead, a curtain was used. Providers went in and out unannounced during women's appointments. This was in contrast to the heavy sound-muffled doors that were at the Boutique, and clinic staff knocked before they came in.

This also meant making assumptions about women's behavior that were not always positive. I briefly touched on the story of Rebecca in the first empirical section of this chapter, who was initially turned away from high-risk care when her fetus was diagnosed with gastroeschesis as she was considered a "liability." Upon a return to the clinic, her case was used as a teaching moment, exploring the multifactorial possible reasons she had a fetus with gastroeschesis. In the midst of quizzing students on whether gastroeschesis has a genetic component (it does not) the doctor first notes that gastroeschesis can be caused by drugs, most notably amphetamines, although there were no indications that Rebecca was a drug user in her history or chart.

Yet I did observe the limits to these invasions of privacy. When discussing one woman's history, there was a limit to what was relevant information to adequately treat the patient. A resident mentions that one patient has a history of incarceration for grand theft auto in 2010. The attending asks if this is "relevant 10 years later," the resident says probably not and comments, "I'll do her a favor and take it off" [the maternal/fetal issue list].

Alongside high-risk prenatal care, women were also interrogated regularly about their bedroom activities (what method of contraception they have been using) and repeatedly recommended to adopt "Satellite-approved" long-acting birth control methods that could be inserted during delivery, and it was not uncommon to bring up sterilization. Only in one case did any woman I spoke with say anything about the constant stream of contraception counseling. Brianna is in her early 30s, Jewish, works as a personal trainer, and owns property with her mother. Perhaps because of her higher social status compared to other patients at the Satellite, Brianna spoke to me enraged after an appointment where a young male doctor had been, yet again, asking about her contraception. She angrily wonders why "who I am having sex with" matters to her prenatal care.

III. Getting to Know Whom for What?

What are the underlying drivers of getting to know baby at the Boutique or getting to know mom at the Satellite? This is where we encounter an irony: getting to know baby at the Boutique through prenatal screening and diagnosis is really about controlling the risks of the pregnancy to the mom. Getting to know mom at the Satellite is about controlling the risks of the expectant mother to the baby. Namely, the clinic project at the Boutique of collecting information about the fetus goes hand-in-hand with providing an "informed choice" to women about whether they would like to terminate or keep a fetus with a detected anomaly. At the Satellite, on the other hand, “getting to know mom” is brought full circle, as the underlying driver of care is organized “for the baby.”

For the Mom

Fetal probing is taken to unprecedented technological heights at the Boutique. A clinical emphasis on “informed choice” offers a rhetorical thoroughfare for prenatal testing technologies to take hold in the clinic, creating new prenatal choices based on different genetic renderings of the fetus. Women “get to know baby” through a battery of prenatal testing that constructs the fetus as “at risk.” Yet ironically, “getting to know baby” is for the mom.

The Boutique’s focus on fetal testing was connected to women’s imaginary of what “having children” would look like, and this often included as much prenatal testing as possible to ensure against the likelihood of having a disabled or handicapped child. This was often multi-faceted, with women feeling a responsibility to not have a child on the precondition of the child itself not suffering from the get-go, and also considered the impact of a disabled child on their other children or personal and financial livelihood.

Indeed, the project of “getting to know baby” was predicated on providing an “informed choice” for women that received abnormal results. Providers and sonographers were open about their political ideology supporting women’s right to choose, and the fetus as inert material. When one woman had a fetus with a cleft palate, one provider asked, “what is she going to do?” implicitly supporting women’s right to terminate a pregnancy in the face of a physical anomaly that can be surgically fixed after birth. After interviewing a sonographer applying for an open position, the current sonographer spoke negatively about her, mentioning there was “something fishy” about her, noting that she found out that the interviewee “moonlights at a church.” At the Satellite, a physician trained at the Boutique made her views outright during a team discussion about what to do with a pregnant woman diagnosed with cancer, commenting that doctors should “throw everything” (meaning any cancer treatments available) at the mother as the fetus was “theoretical.”

And over the course of my field work, prenatal testing and discourse around termination went hand-in-hand. When an Orthodox Jewish couple were in the clinic for an anatomical ultrasound, there were no discussions about fetal genetic testing, aside from communicating ultrasound results. Dr. Merritt revealed they follow a different script dictated by religious beliefs with patients from the Orthodox Jewish community, as they have “strict rules” around termination, mentioning, “We don’t even talk about it [genetic screening] with them.”

Women discussed prenatal testing within the context of termination, as do clinicians. For a patient that did end up terminating following a positive diagnosis of Down Syndrome, she was very clear on her views: “I'm going to say it, which is that we did not want a handicapped child in any way. I told my doctor that I wanted all diagnostics available.” Most women I interviewed at the Boutique were open to termination. The majority were unsure whether they would terminate or not following a positive result, but all found facing “the decision” (as referenced by women and providers alike) “haunting” or “prayed to God” that they wouldn’t be in a situation where “the decision” had to be made.

“The decision” was the centerpiece of prenatal care at the Boutique, coming from the background to the foreground following a positive result. Hannah received a positive result for Turner syndrome, a genetic anomaly affecting females where one of the “X” chromosomes are partially or fully missing. Phenotypic representations of Turner syndrome are highly variable, in some cases causing serious heart defects and other serious physical symptoms, while others can have a mild phenotypic presentation and lead normal lives. Hannah represents an outlier at the Boutique, as she was not considering termination.

Soon after receiving a positive result, Hannah recounts a conversation where she was asked if she was "planning on terminating" or "going to keep the baby." Because of her contextually unorthodox views on termination, she found the coupling of prenatal testing with termination offensive, saying she was "overwhelmed" and "uncomfortable" with multiple clinicians communicating results in this way. She noted the one provider she had encountered that did not ask her about termination.

For the Baby

The notion that care at the Satellite was "for the baby" was shared by both patients and providers alike. Dr. Brown, an attending physician at the Satellite, describes working in her specialty as "one of the few times where the patient and the healthcare provider are on the same page" as "we both want the healthiest baby possible" and that that is "just undisputed, almost always." When one patient comes to her appointment on the verge of a panic attack, telling the doctor that her grandmother just passed away, she is "freaking out" and while cupping her belly tells the doctor "I haven't felt him moving." She tells the doctor she does not want to cry since there is so much "stress on the baby" already. The doctor soothingly tells her, "If you need to cry, cry…we'll take care of your baby" and then starts checking the mother for the fetal heartbeat.

Sara is diagnosed bipolar, has a history of homelessness, and is on methadone during pregnancy. She describes how "it's worth it" to make the two-hour drive to the Satellite because she saw herself "falling through the cracks at the last clinic" and foresaw that because she is on methadone she saw her previous prenatal care clinic experience "going very badly." Sara sums up her experiences at the Satellite as "everybody's on the same page and concerned about what I'm concerned about, which is the baby."

Providers also leveraged that concern for the baby to influence patient behavior. In one instance, a patient did not want to have a flu vaccine. After a few minutes of discussion with the nurse, she mentioned that the vaccine was "for the baby," leading to the patient's immediate acquiescence. In another instance, a resident ran into the room of doctors to check whether a flu vaccine passed the placental barrier. A patient questioned whether the vaccine would actually matter for protecting her baby, and did not want it otherwise. In hearing that the vaccine reached the baby, she too had the vaccine following initial refusal.

The social worker also describes discussing marijuana use with patients that test positive on drug screenings. She mentions how marijuana use during pregnancy is "iffy" now that it is legal in California, and she recounts how when patients tell her that they have a medical marijuana card she tells them, "You have a medical marijuana card but your baby doesn't." And that when they take it "it goes into the baby's brain" and "we don't know enough" about what the long-term effects are.

The Satellite was organized as "for the baby" in that it was also viewed by three patients I spoke with as a refuge for pregnancies that women were carrying against the advice of non-Satellite physicians. Jackie was in her 20s, and had a genetic anomaly leading to her developmental delay. Finding out that her baby had the same anomaly, Jackie's grandmother recounts to me that Jackie's previous doctor had told her that "the baby's brain would be jelly" and she should terminate. Jackie made it clear that she wanted the baby "no matter what" and appreciated that Satellite providers respected her decision. Although clinic appointments focused on fetal anomalies, Satellite providers were concerned week after week about whether she was in a domestic violence situation with the father of the baby.

And finally, an ultimate goal of following certain high-risk patients was making sure Child Protective Services did not forcibly take away the baby post-birth. Not only was care at the Satellite conceived of as “for the baby” –but was for the “kiddo” as well. One case that received significant attention throughout my field work was that of a 22-year-old woman with a schizophrenia and bipolar diagnosis. A doctor describes her as “low risk” medically but “high-risk because of psychiatric issues.” The patient wanted to self-discontinue her psychiatric medication, is having delusions of owning her own theme park, and is considered to have “impaired insight” into her condition. A doctor expresses regret that the team cannot “5150,” or have her forcefully institutionalized, as she is not “actively in danger of harming herself or others.” Yet she is in active danger of having her baby taken away post-birth. A resident brings up her experience with a parallel case where the mother was having delusions, and was not allowed to hold her baby after birth as the child was taken away by Child Protective Services immediately post-birth. The team moves on with the case, mentioning that when babies are taken away in similar situations, “It’s bad for the kiddo as well.”

IV. Discussion

Ethnographic data paints a distinct difference across the extremes of social class in what risks are being constructed and attended to in high-risk prenatal care. This comparative chapter examines the divergent focus of getting to know mom at the Satellite versus getting to know baby at the Boutique. Within a wealthier America the baseline health of expectant mothers (even when considered high-risk) means that specialized prenatal care has the luxury of a focus on the fetus, constructing the fetus as “at risk.” Poorer women, on the other hand, experience intensive mother management during pregnancy, with care addressing risks ranging from the medical, to interpersonal, to the economic. Satellite care constructs the expectant mother as “at risk.” Yet underlying these different constructions of risk across field sites is irony: the emphasis on fetal testing at the Boutique is to manage the risk of having a disabled child to the mom, while the intrusive mother care at the Satellite is about controlling the risks expectant mothers impart on the baby.

Prenatal care across the socioeconomic spectrum also produced different "patients" across the maternal/fetal divide. In the Boutique, the focus of attention is representing, investigating the health, and "getting to know" the baby for the mother, father, and perhaps beyond, the extended family. However, the "patient" is the mother. The physicians and the rest of the personnel are catering to her, her partner, and beyond. In the Satellite, the focus of attention is the condition of her mother, her history, and her current material, physical, and psychological condition. The ultimate "patient," however, is the baby, whether it can make it to term and be healthy, with the mother's condition relevant, of course, but largely subordinated to the ultimate needs of the baby.

Prenatal care provided in the context of poverty, drug addiction, mental health issues, homelessness, and other risks associated with lower socioeconomic status automatically biases providers of care to focus on different strategies when dealing with both the mother and child and are starkly different than the focus in the clinic for the affluent. But is the care actually worse? Unexpectedly, the findings are surprising on this account. Multiple physicians at the Satellite talk about how poor women receive team-based, coordinated, and comprehensive health care that surpasses the sometimes fractured, yet technologically advanced surveillance received by their wealthier counterparts. Moreover, the overmedicalization at the Boutique, such as providing early 3D color images of the fetus, camouflages the real mission of prenatal care, where the outcome of a healthy mother and child is the goal.

Yet observations also uncovered an intrusive, and sometimes punitive nature of care for women at the Satellite. Through federally funded family planning services, intensive mother management included interrogation into women's private sexual lives and a constant stream of recommendations to be on long-acting birth control, even sterilization, when women had previously declined family planning services multiple times. And overall, women at the Satellite were not given the luxury of privacy, as women's personal histories and motivations were pieced apart, whether relevant or not to delivering care.

The Satellite, albeit delivering what is considered high quality care, represents an island of resources amidst a lack of access for low-income expectant mothers to health care during pregnancy. Severe inequalities between the Satellite and Boutique exist in terms of accessibility and availability of care. Many women in this study ended up receiving care at the Satellite following irresponsible prenatal care in previous pregnancies, recounting serious health consequences, such as late-term miscarriage and developmental disability, caused by this negligent care. Furthermore, physical access to high-risk prenatal care was logistically difficult for expectant mothers. Getting to the Satellite required long journeys, in one case a 5-hour drive, to access the specialized care needed during their high-risk pregnancies when coming from rural areas.

There was also a stark difference in access to prenatal testing for women across the Boutique and Satellite. Patients at the Boutique received testing beyond the standard recommended fetal testing during pregnancy outlined by the American College of Obstetricians and Gynecologists (ACOG), including various blood tests and ultrasounds. A low-cost, state-covered prenatal screening program is offered to all pregnant women in California. Through a combination of blood draws and ultrasound, risks are assessed during pregnancy for Down Syndrome, Trisomy 18, Trisomy 13, Neural Tube Defects, abdominal wall defects, and Smith-Lemli-Opitz syndrome. Following a high-risk determination on one screening, further screening and diagnostic testing in addition to genetic counseling are covered, as well as termination before the 24-week mark. This pathway of prenatal testing is considered the standard of care, and although public support for this pathway is available, poor women did not in practice have equitable access to this particular aspect of prenatal care.

In conclusion, because some of the “high-tech” available options at the Boutique – such as the 4D, large TV ultrasound enhancements and numerous and sometimes ambiguous genetic tests – increase anxiety of the mother unnecessarily without fundamentally changing the ultimate outcome, their curtailment is recommended. Given the high demand for the scarce services of the Satellite by low-income prospective mothers, its expansion and replication seems obvious. Given the multifaceted problems that the mothers at the Satellite have, improving coordination with other social services further and possibly providing them under one roof would also be recommended.

Chapter 4: Prenatal Care as a Temporal Regime

Clocks, calendars, schedules, and deadlines are embedded within pregnancy and prenatal care—spanning the biological, biomedical, social, economic, and political. The prenatal timescape covers biotemporal rhythms of the ticking "biological clock" and the 40-week average length of pregnancy. There's a socially acceptable time point (12 weeks) when a pregnancy can appropriately become public, indicative of sociotemporal order. Insurance coverage also comes into play—as a timetable dictates at what point during pregnancy certain prenatal testing is and is not covered. In California, the 24-week legal deadline during pregnancy marks when the rights of the fetus outstrip the rights of the mother, and termination becomes illegal.

Although the Boutique and the Satellite represent very different social milieus, all pregnant women are processed through the structural apparatus of prenatal care in a large metropolitan city on the West Coast of the United States. This chapter examines how the temporal regime of prenatal care unfolds across the extremes of socioeconomic class, unveiling temporal asymmetry between the high-risk pregnancy when rich and poor. I use the term regime to connote the authoritarianism underlying the temporal rhythms of prenatal care, as healthcare providers draw on vernacular of patient non-compliance to "mark" certain patients as not adherent to a rigid temporal order. I do not engage with compliance or adherence as negative or positive, but rather this chapter traces the roots of this vernacular within high-risk prenatal care across social classes.

Prenatal Care as a Temporal Regime

Pregnancy and prenatal care operate within various temporal dimensions. Pregnancy has its own units of time, such as reference to the first, second, or third trimester, used colloquially and within biomedicine. To temporally bracket the reproductive life course, biomedically defined temporal classifications delineate pre-conception (before conception) from post-natal (after birth) and time periods in between (e.g., prenatal, antenatal, perinatal). Women communicate how "far along" they are within the biotemporal arc of pregnancy by "weeks" or "months," while at the doctor "weeks" or "months" are subsumed by the more formal time measurement of "gestational age" (based on the date of the last menstrual period before pregnancy).

Prenatal care operates within a calendrical system, with set temporal sequences and rhythms to recommended doctors' visits and testing. According to the "Guidelines for Perinatal Care" outlined by American College of Obstetricians and Gynecologists and American Academy of Pediatrics (American Academy of Pediatrics & American College of Obstetricians and Gynecologists, 2017), prenatal care itself adheres to an "individualized" structure within certain calendrical bounds. An "uncomplicated" first pregnancy is meant to be examined every 4 weeks for the first 28 weeks of gestation, every 2 weeks until 36 weeks of gestation, and weekly thereafter. Within the examined empirical context of a high-risk pregnancy, the prenatal care appointment schedule is up to the treating physicians with "follow-up visits determined by the individual needs of the woman and assessment of her risks."

Each patient's prenatal care calendar is "individualized" depending on ongoing risk assessments—across both the Boutique and the Satellite, it was not uncommon for women to have three to four prenatal appointments per week when evaluated as of the highest risk.

Risk assessment not only sets the temporal pace of prenatal care visits, but risk itself is a time-based technology encompassing the past, present, and future. Risk assessments during a prenatal care appointment consider aggregated information from the past to forecast the future (such as identifying anemia as a risk factor tied to maternal mortality) (Daru et al., 2018), and apply them to the present (treating anemia with iron supplementation to lower risk of mortality).

Documented health disparities exist at the intersection of inequality and temporality. Racial disparities in health can be partially explained by "accelerated time" caused by exposure to socioeconomic disadvantage leading to a fast-tracked decline in physical health across the life course, otherwise known as the "weathering hypothesis" (Forde et al., 2019). Biotemporal rhythms dictate that pregnancy lasts on average 40 weeks, yet this varies by country. The average length of pregnancy declined from 39.1 to 38.5 weeks over the course of the last 20 years in the United States. This decline is attributed to overutilizing biomedical intervention in the birthing process compared to countries of comparable wealth (Declercq et al., 2023).

Uncovering Temporal Asymmetry

The temporal regime of prenatal care heavily relies on various time regulation tools such as scheduling, planning, and self-monitoring—all of which unfold differently across socioeconomic positions. This chapter examines the differing temporal sub-routines of the Boutique and the Satellite, and layers this examination of temporality with how non-compliance plays out differently across clinics. Women at the Boutique and the Satellite were subject to temporal orders that they were expected to comply with, yet there were different expectations across sites.

Methodologically, this chapter also addresses the question of how the Satellite and Boutique fit together as empirical sites of high-risk prenatal care and pregnancy. I analyze a question I found to be a particularly challenging aspect of my comparison — how can I empirically stitch these seemingly disparate sites of pregnancy together? How can we use the high-risk pregnancy category of practice as a tool of sociological analysis? Being labeled high-risk during pregnancy practically means women are the most comprehensively processed through the institutional assemblage of prenatal care. Addressing the sameness of pregnancy across social classes, all women, rich or poor, are subject to a reproductive calendar and related tools of time regulation within this calendar. This is where the comparative design is crucial—the "deviance" or "non-compliance" dubbed at the Satellite was illuminated by the conformity and omnipresent "compliance" to a temporal prenatal care regime at the Boutique. Rich women are the ultimate "compliant" patients–which is left unsaid.

I. When does the high-risk pregnancy begin?

The high-risk pregnancy follows a different timeline when rich or poor. Katherine recalls her acupuncturist's comment: "I don't think there's any issue with you getting pregnant. It's just that you want to get pregnant now," as solidifying her decision to continue fertility treatments. Her "clock was ticking" at 37, and beyond "the golden cut off" of 35, the appeal of "having younger eggs" put her "over the edge to say, 'I think let's do it [in-vitro fertilization].' " Although Katherine and her husband had been trying for less than six months to conceive, implanting and having a reserve of embryos that were "37 as opposed to 38 or 39" made sense considering she and her husband wanted three children (they have a two-year-old daughter).

For Katherine and other women of the Boutique that began their pregnancy journeys with the helping hand of assisted reproductive technology (ART), the high-risk pregnancy begins pre-conception. Due to increased risk of maternal and perinatal complications, ranging from higher rates of pregnancy-induced high blood pressure, pre-term birth, and low birth weight, to complications associated with multiple gestation, (Nagata et al., 2019) advanced obstetric care is clinically indicated from the get-go for all pregnancies conceived through ART. Katherine and others using ART skip through prenatal assessments of high versus low-risk, and are in a group of women at the Boutique where a high-risk pregnancy was on-record from its pre-beginnings. In cases like Katherine's, the high-risk pregnancy begins pre-conception.

When does the high-risk pregnancy begin at the Satellite? Valeria's high-risk pregnancy was identified during her third trimester when at 28 weeks she found out that with 99% accuracy she was having a boy with Down syndrome, or Trisomy 21. Sharp, quiet, and composed, Valeria decided to participate in this research following a thorough line-by-line review of the consent form and a week of consideration. I learn later that this caution is a result of years of dealing with healthcare bureaucracy, as her family has been receiving medical bills she initially thought were covered for her two boys, aged 4 and 9, necessitating seemingly un-ending in-person visits to California's public services offices.

Every time I see Valeria over the span of a few weeks, she appears deeply weary. When I'd check in on her she'd tell me, "Some days are hard" and mentions that she is more tired during this pregnancy than she was during her others. She attributes this to coming to terms with having a child with special needs, waffling between worry about what the future holds and being at peace: "[I] always say to myself, inside me, 'Everything will be fine.'" Valeria's husband tentatively tells me, "It's not like… we want…" then trails off looking at me. Valeria chimes in stating, "There's nothing we could do." It is too late to consider termination delineated by California's 24-week legal cutoff. And after viewing the late-term fetal ultrasound they describe seeing "just a human, it's a person already" with, "...hands, feets (*sic*), legs, everything." She tells me it might feel differently if "he was not formed." José tells me "He's my son, and I love him." When I ask if she would have considered terminating if she had received this genetic news about her pregnancy earlier, she replies, "not this late."

Valeria is one of many women at the Satellite who are considered "late to prenatal care" or did not access prenatal care until the third trimester. This stratified temporal unfolding of the high-risk pregnancy continues throughout the course of prenatal care for the wealthy and poor—different time-based orders dictate care across the Boutique and the Satellite, as explored in the following sections.

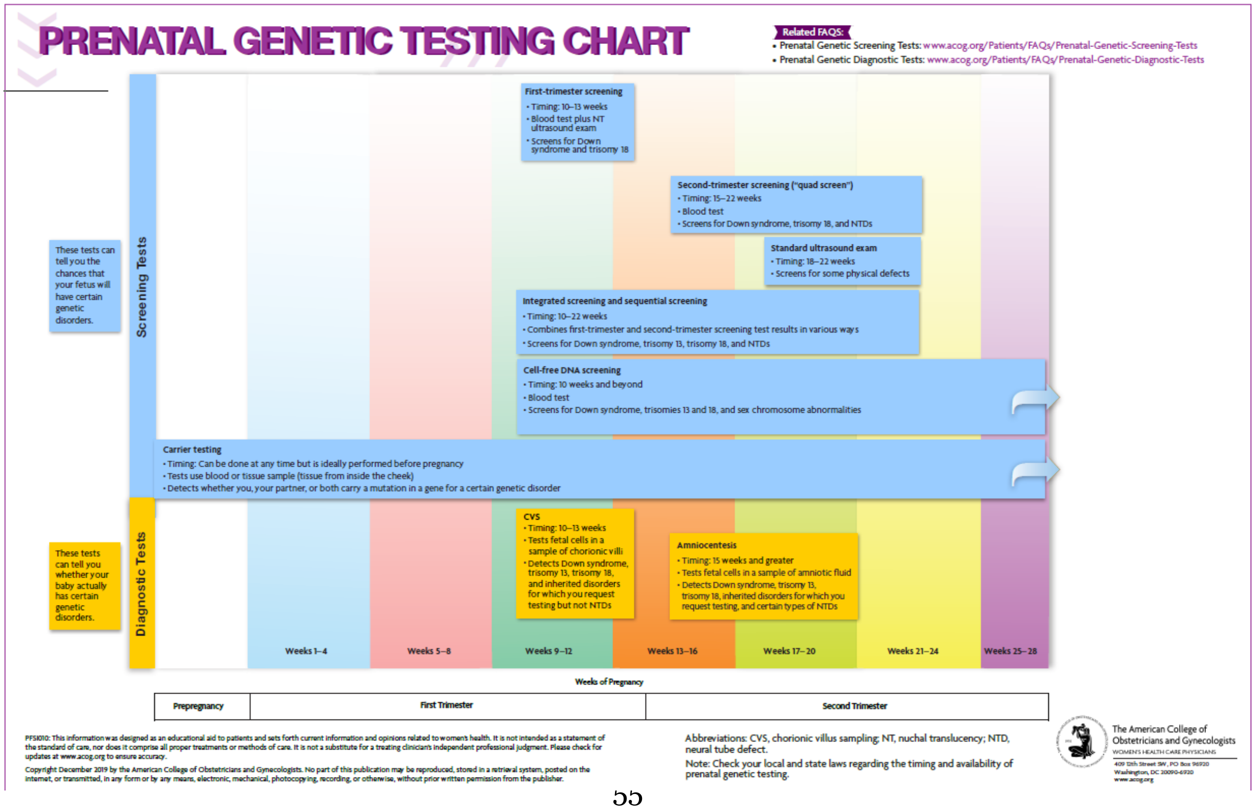
II. Scheduling

Prenatal care at the Boutique operates amidst two main interconnected timescapes—one political, the other emotional. High-risk care for the wealthy follows a calendar of prenatal screening and diagnosis temporally organized around a 24-week deadline. Although women are not explicitly marked as non-compliant or compliant to this temporal ordering of prenatal diagnostics, women are expected to adhere to this calendar of testing and encounter pressure to adhere to this calendar in a way poor women do not. On a different note, women and clinic staff also follow an emotionally propelled temporal algorithm when the prospect of termination comes into the foreground: the sooner the better. This next section traces the rhythms of prenatal care at the Boutique that occur before many women at the Satellite have gotten their foot in the door of high-risk prenatal care.

A calendar of prenatal genetic testing

The Boutique centers around a politically driven temporal sub-routine of prenatal genetic screening and diagnosis (PSD). Prenatal genetic screening and diagnosis follow a calendar of carefully timed data collection of the pregnant body—such as blood, placental tissue or amniotic fluid for invasive testing, and a series of ultrasounds. Each of the tests has a "window" where the appropriate data and analytics are produced. For example, chorionic villus sampling (CVS), conducted via the collection of placental tissue for genetic sequencing, is done between 10 and 13 weeks, while an anatomical ultrasound is conducted between 18 and 22 weeks. The infographic below is ACOG's "prenatal genetic testing chart" outlining each window:

Figure 2: Prenatal Genetic Testing Chart Issued by the American College of Obstetricians and Gynecologists



Related FAQS:
- Prenatal Genetic Screening Tests: www.acog.org/Patients/FAQs/Prenatal-Genetic-Screening-Tests
- Prenatal Genetic Diagnostic Tests: www.acog.org/Patients/FAQs/Prenatal-Genetic-Diagnostic-Tests

These tests can tell you the chances that your fetus will have certain genetic disorders.

First-trimester screening
- Timing: 10–13 weeks
- Blood test plus NT ultrasound exam
- Screens for Down syndrome and trisomy 18

Second-trimester screening ("quad screen")
- Timing: 15–22 weeks
- Blood test
- Screens for Down syndrome, trisomy 18, and NTDs

Standard ultrasound exam
- Timing: 18–22 weeks
- Screens for some physical defects

Integrated screening and sequential screening
- Timing: 10–22 weeks
- Combines first-trimester and second-trimester screening test results in various ways
- Screens for Down syndrome, trisomy 13, trisomy 18, and NTDs

Cell-free DNA screening
- Timing: 10 weeks and beyond
- Blood test
- Screens for Down syndrome, trisomies 13 and 18, and sex chromosome abnormalities

Carrier testing
- Timing: Can be done at any time but is ideally performed before pregnancy
- Tests use blood or tissue sample (tissue from inside the cheek)
- Detects whether you, your partner, or both carry a mutation in a gene for a certain genetic disorder

These tests can tell you whether your baby actually has certain genetic disorders.

CVS
- Timing: 10–13 weeks
- Tests fetal cells in a sample of chorionic villi
- Detects Down syndrome, trisomy 13, trisomy 18, and inherited disorders for which you request testing but not NTDs

Amniocentesis
- Timing: 15 weeks and greater
- Tests fetal cells in a sample of amniotic fluid
- Detects Down syndrome, trisomy 13, trisomy 18, inherited disorders for which you request testing, and certain types of NTDs

PFS010: This information was designed as an educational aid to patients and sets forth current information and opinions related to women's health. It is not intended as a statement of the standard of care, nor does it comprise all proper treatments or methods of care. It is not a substitute for a treating clinician's independent professional judgment. Please check for updates at www.acog.org to ensure accuracy.

Abbreviations: CVS, chorionic villus sampling; NT, nuchal translucency; NTD, neural tube defect.

Note: Check your local and state laws regarding the timing and availability of prenatal genetic testing.

What's missing from this chart is *why* this data collection is so carefully choreographed. Although ACOG titles this infographic a "chart"—the chart is organized temporally as a timeline or a calendar. Aside from NIPT and genetic carrier testing, all screens and tests have demarcated timelines. There are some technical motives for aligning certain technologies of PSD with the pregnant body at certain gestational time points. For example. 18-22 weeks is when optimal visualization occurs for ideal visuals of fetal anatomy. Yet technologies of PSD have to align with the pregnant body at certain times for political reasons, technicalities aside. Notice that all testing is recommended before the 22-week mark in ACOG's chart. Embedded within the ACOG's prenatal genetic calendar is an unillustrated political deadline: 23 weeks and 6 days. At 24 weeks, abortion becomes illegal within the state and California. As soon as a woman receives a positive result, a countdown begins to when a fetus has a right to life.

It was a given that wealthy women were compliant to this calendar in a way poor women were not. Although technically this entire process of prenatal genetic testing is optional, the majority of wealthy women underwent all recommended genetic testing, even when an invasive test (which comes with a risk of miscarriage) was presented. I observed only two instances of refusal of genetic testing during my field work at the Boutique. One woman mentioned that she "didn't want to get anyone in trouble, because it seemed that the state of California "required" screening. However, they felt this requirement was not a problem since she and her partner were "totally down with it."

We can illuminate the extent of wealthier women's compliance by examining an anomalous case at the Boutique. In one instance, a woman came for a 20-week anatomical ultrasound and had previously not been seen for her pregnancy. The physician seeing her was puzzled during the ultrasound. The treating physician was rendered speechless during the appointment, quizzically probing the patient for why she had just shown up for an appointment when she was already so far along, a common occurrence at the Satellite. Following the appointment, her physician mentioned she found the situation “weird.” Speaking to the patient briefly after the appointment, I found out she was Mormon, and would not under any circumstances consider termination. She explained a prenatal check-up earlier had not been a priority based on a combination of her reluctance to terminate and being in the midst of moving. This patient was an outlier at the Boutique in her lack of adherence to the timing of prenatal care, as the only patient that had not followed the protocol of an early first trimester ultrasound and screening.

The status of the calendar at the Satellite

The prenatal genetic screening and diagnosis calendar experienced by women at the Boutique was not a regular part of clinic activities at the Satellite. As for most, the high-risk pregnancy began when the cycle of the PSD calendar ended. Few women at the Satellite had undergone NIPT that I spoke with, a test the majority of women at the Boutique underwent during their first trimester. In the case of Valeria, this was given during her third trimester for strictly informational purposes following indications of a fetal anomaly on her first ultrasound at 27 weeks at a community clinic. When poor women did have genetic testing as an option, they did not receive the same pressure to test that wealthier women did, in particular for invasive testing.

One woman that received an inconclusive result on NIPT had insurance reject referrals for genetic counseling twice. On paper, her risk factors matched those of women at the Boutique who received genetic counseling as part of routine care: she was of advanced maternal age, had a previous late-term miscarriage, and had received a suspicious result on NIPT. I only interviewed one woman who had undergone genetic counseling during a previous pregnancy, in sharp contrast to the routine nature of genetic counseling as part of the clinical pathway of the high-risk pregnancy at the Boutique.

Focus on genetics at the Satellite was minimal. My interview guide, constructed and honed at the Boutique, was not relevant at the Satellite, necessitating a shift from questioning experiences with prenatal testing to the broader experience of pregnancy and prenatal care. Not only was genetics not the focus at the Satellite, but carrier testing, which many women at the Boutique had, was considered a waste of resources at the Satellite. Vying for the market share, a genetic testing company had a failed attempt to "build patients" at the Satellite—covering the cost of carrier testing in order to work the service into routine practice. Yet one of the attending MFMs mentioned that the test was unnecessary, a clinician at the Satellite comments that "family history beats genetic tools" when discussing the family history of one patient and the potential genetic component to her complications.

The sooner the better

Alongside a ticking political clock was a growing emotional attachment to pregnancy. Although abortion becomes illegal at 24 weeks, the Boutique staff and patients followed the temporal algorithm "the sooner the better" when it came to timing termination. A collective goal at the Boutique was to anticipate the 24-week deadline by collecting as much information about the fetus as soon as possible—thereby allowing women to terminate as early in a pregnancy as possible given technological constraints.

Kirsten relays the recommendation of her doctor about undergoing CVS following a high-risk result on early screenings: "You know what, it's harder to terminate a pregnancy at sixteen weeks than it is at thirteen weeks or whatever it would be, so I really would recommend doing the CVS." She knew that there was a "finite window" to go through with the CVS and commented: “I don't want to get too attached if it's not going to work out, so I want to have as much information as soon as possible.” When asked if she would consider termination following a positive result, she mentioned that if it was Down Syndrome “I think I would probably terminate which is “easier to say and come to that conclusion when you’re earlier on.”

Nadia received what ended up being a false positive for a genetic anomaly on NIPT, and replies “I would terminate” if the false positive had ended up being true positive. She discusses the timing of testing, and she had CVS at 13 weeks. Looking back, she mentions “if you have to make these decisions…I’d like to make them before week 12.” Another woman did end up terminating following a positive for Down syndrome on all early genetic screenings. Noting that she found out at the tail end of the “window” for early prenatal screens in the first trimester, she regretted not going in earlier as an earlier termination would have given her more “peace of mind.”

A positive genetic result was also an event capable of suspending time at the Boutique. Following a positive result on NIPT, a patient I interviewed was in the Boutique for invasive testing “less than 24 hours later.” Following a “positive” or high-risk result, women were fit into an already full schedule as “add-on” appointments for invasive diagnostic testing through CVS or amniocentesis to confirm or deny the high-risk result.

These “add-ons” were highly disruptive to clinic flow. The waiting room would become packed with expectant mothers anxious to either see the doctor or get to their next scheduled activity, with a few reacting to the increased waiting time with anger. In these cases, the receptionist and clinic manager would be running back and forth between the physician and women in the waiting room needing updates. Clinic staff would announce there had been a positive result and that was the reason there was a hold-up, with the expectation that women would respond empathetically and also expect to be first in line to see the doctor following a high-risk result if they were in a similar position.

Temporal Non-Compliance at the Satellite

After years of fieldwork at the Boutique where patient compliance and adherence were absent from clinical dialect, it was shocking to hear patients described as "non-compliant" at the Satellite. Upon closer examination of the how and when the term "non-compliance" arose in the Satellite, I realized the term often held temporal connotations. Non-compliance was entangled with risk—specifically elevated risk of a future adverse outcome that could be ameliorated by a different course of action or behavior than the patient was currently taking. For example, the risk of future vision loss due to uncontrolled diabetes could be ameliorated by a patient's current stricter adherence to a diet and exercise regime. It could also apply to something more mundane like showing up to the clinic as planned.

Although being "late to prenatal care" or missing scheduled appointments potentially due to structural barriers such as transportation did not trigger accusations of non-compliance, when the risk levels became high enough this basic form of temporal non-compliance became an issue. There were limits to understanding in cases where pregnancy was endangering the life of the expectant mother or fetus. One patient was labelled as "totally noncompliant" for not showing up to the clinic since she had serious heart trouble related to her aortic root. The attending was worried that the expectant mother could "drop dead at any moment" considering the lack of medication she was on and made sure the clinical team kept on reaching out to her, stating, "I can't morally let this lady float around." With a change in medication, the chances of this patient "dropping dead" could be lowered, as her current medication regimen was "barely doing anything." As prenatal care is defined by temporal interventions, a change in this patient's current medication regimen was perceived as altering the potential futures of this pregnancy.

Both the Satellite and Boutique operated within the same reproductive timescape, with scheduling, planning, and temporally based self-monitoring underlying interventions to minimize risk. Wealthy women internalized this time-based intentionality, organizing their reproductive lives in compliance to this timescape. Non-compliance vernacular at the Satellite was most often used when poor women breached these time-based reproductive ideals. The next section examines the two sub-routines at the Satellite women were expected to be compliant to, both of a temporal nature: 1) following self-monitoring regimen of glucose monitoring when diagnosed with gestational or chronic diabetes, and 2) planning or scheduling their own reproduction through contraceptive technologies.

III. Self-monitoring

A key sub-routine of the Satellite was training women to self-monitor diabetes on a set schedule outside the confines of the clinic. When presented with gestational or chronic diabetes during pregnancy, women were instructed to engage in a regimen that took considerable time and effort in their daily lives. This regimen included following dietary restrictions such as eating foods low in sugar (one patient was instructed to "just eat salads"), a recommended amount of exercise (usually walking), and pricking their fingers for blood sugar readings using a glucose meter or monitor four times per day at regular intervals. In more advanced cases, women were prescribed medications, such as insulin, to help manage their blood sugar if diet and exercise alone were not enough to manage glucose levels.

Providers expected women to provide physical proof of adherence to this diabetes regimen through running annotation of blood sugar readings in a "little book." As physicians could not be sure of whether women were adhering to dietary, exercise, or medication regimens, these blood sugar logs were how Satellite providers surveilled women once they left the clinic, and specifically whether women were temporally compliant to the regular intervals of at home blood testing.

All pregnant women develop some insulin resistance during late pregnancy (Retrieved from https://www.cdc.gov/diabetes/basics/gestational.html), as the placenta releases hormones that make it difficult for the body to process insulin effectively. In an example of how “accelerated time” plays out for women of lower socioeconomic status, poor women are more likely than wealthier women to reach the level of insulin resistance required to be diagnosed with gestational or chronic diabetes. This adds a layer of complexity when examining the “compliance” to a diabetes regimen, since even with perfect adherence women’s behavior could be overtaken by the placenta causing insulin resistance. There was therefore a certain amount of leeway given to women displaying elevated levels. When the social worker at the Boutique was discussing a case of fetal demise likely caused by uncontrolled diabetes, she mentioned the need to reassure the patient that “it was not her fault” since she had “tried” to follow the prescribed regimen.

The prevalence of gestational and chronic diabetes varied across sites and was much more common a diagnosis at the Satellite versus the Boutique, as socioeconomic position is a risk factor for diabetes during pregnancy (Anna et al., 2008). Taking care of gestational diabetes outside of the clinic often required women to overhaul their diets and assumed a control over time (the ability to eat and test blood sugars at regular intervals) that poor women did not always have. Indeed, an ethnographic study examining the intersection of self-care in chronic diabetes and socioeconomic class identified the lack of “temporal flexibility” in poorer people’s work schedules as a main barrier in adhering to diabetes regimens (Lutfey & Freese, 2005).

Most women at the Satellite were “compliant” to at-home glucose monitoring, bringing annotations of this monitoring as proof to providers that they were following instructions. This compliance was not outright termed “compliance,” but rather the vernacular of “responsible” or “reliable” was most commonly used to describe women that abided by the prescribed regimen. In one case, an MFM remarked that a patient “did really good” when the belly measurement of her fetus was reduced after she was instructed to “just eat salad” following a large fetal abdominal measurement (a symptom of diabetes that imprints physically on the fetus) a few weeks prior. In another instance, a resident comments, “She seems pretty on top of it…pretty responsible…the way she was talking about it” when relaying her discussion with a patient about diabetes to another physician.

Even when patients were “non-compliant” to certain parts of the diabetes regimen, the recording of bloods sugars four times per day was the most important aspect of the diabetes regimen. It was the act of self-monitoring on a schedule that providers mostly appraised during appointments and discussed during team meetings, and providers were slow to attribute intentionality to non-compliance generally. In one interaction, a provider is flipping through a patient’s blood sugars log and remarks on one that is “elevated” and asks the patient, “did you have pancakes?” When the patient nods that she did have pancakes, the provider mentions to her that patients don’t realize that carbs are also sugars, so she has to watch out for things like toast and the “cakey part of pancakes.” In another instance where a patient had recorded her blood sugar readings but had a few elevated numbers, the doctor grabs the patient’s drink out of her hand, and without judgment tells her that the drink had more sugar than she thought and was not good for her. Her lack of adherence to the diet was not attributed to intentionality, but rather a lack of nutritional education. Patients were also judged overall rather than solely on one instance of non-compliance.

When one patient forgot her sugar log, the resident reported to the fellow that "she usually brings her logs" and tells her "Very reliably what they [blood sugars] are."

Yet in one case, a patient's temporal non-compliance came to the foreground when maternal and fetal risk was perceived as outright dangerous. Beatrice was in her mid 30s, Persian, and was outright labelled as "non-compliant" by providers during a team meeting. She had been prescribed insulin, and clinic staff suspected she was not taking it as prescribed, and neither was she checking her blood sugars as recommended. Behind the scenes, a physician asks if "it's a needle thing" since insulin needs to be self-injected. The team then decides to check if the patient has been getting her insulin refilled, to have an objective rather than self-reported measure of whether Beatrice is taking her insulin.

I observe an appointment of Beatrice's and even though the provider acknowledges that "the placenta makes it difficult to control blood sugars," the physician takes a paternalistic, authoritarian stance during the appointment. She asks, "Why aren't you checking [blood sugars] as recommended?" Her last hemoglobin A1c measure (a test that measures average blood sugar levels over the span of a few months) was abnormally high, to the point where the physician tells Beatrice that there is a risk of fetal demise and she herself was at risk of vision loss (two examples of major complications of gestational diabetes) if her blood sugars continued as high as they are. The physician tells her, "We let you off the hook before" but now she needs to be "really strict at home" considering "even high [blood sugar] a little bit puts the baby at risk." When the physician tells her to check her blood sugars on a schedule, the patient laughs outright, saying that she cannot do that with her work schedule.

IV. Planning

High-risk prenatal care at the Satellite was deeply intertwined with attempts to organize the temporal aspects of women's reproduction in a way that wealthy women already organized their reproduction. Baked into prenatal care across the Boutique and the Satellite is the notion that pregnancy should be scheduled or "planned." Wealthy women intensively planned their pregnancies, citing that "it was time" to have children considering the combined ingredients of a committed partnership and financial stability. The imperative for planning pregnancy is embedded within the overall structure of delivering prenatal care in the United States. As written in the Guidelines for Perinatal Care, "…physicians should encourage women to formulate a reproductive health plan…the optimal number, spacing, and timing of children in the family…" (p98).

Embedded within high-risk prenatal care at the Satellite is a federally funded family planning service program, called Title X, distilling a coordinated effort to nullify the chances of a patient having an unintended pregnancy, as the majority of women's pregnancies at the Satellite were unplanned. An interview I conducted with the Title X program manager, Sarah, pointed to the powerful orthodoxy underlying the notion that a pregnancy should be planned.

Sarah tells me that the "Title" in "Title X" means "the government has decided it's important enough to spend money on." She sums up Title X as a program "meant to pay for services related to family planning for people that would otherwise not be able to afford them." She describes her daily work as counselling patients on what kind of birth control they would like to use. Sarah tells me about learning about women's different approaches to having children, commenting that although some absolutely do not want to become pregnant and are happy to work with her on birth control, "some people think that it [pregnancy] shouldn't be planned, which to me is insane." When I ask why this is insane, she replies, "I'm a planner, even planning a pregnancy… I'm just in a different headspace I guess."

Indeed, Sarah's headspace aligned with how women at the Boutique temporally approached their own reproduction. Controlling the biological process of reproduction through technology began in most cases decades before pregnancy, as women at the Boutique relied heavily on various birth control methods to make sure they got pregnant at the right time in their lives. For most patients of the Boutique, biological beginnings to a pregnancy were preceded by a similar life escalator. This escalator was pre-determined and "planned" –often revealing a faith in "having it all." Underlying this planning was a complex choreography, based on the coordinated ingredients of committed partnership, financial stability, and perhaps building a career, until "it was time" to start a family based on both parents being (mostly) emotionally ready or in some cases a "ticking biological clock" that told them "now or never." Having a family was the logical next life project in a series of stepwise and often successful life achievements. Like the two women quoted below, having children fit into the "big picture" of a carefully curated life course:

> We got married in June of 2013. We knew we wanted to have kids…I'm a little bit of a type A, I've mellowed out in my last few years. But, I was like, "Alright, let's do this, this is the time, this is the schedule." And then my husband's like, "You're being way too intense about this." So we just sort of had sex whenever and then we weren't conceiving, which I knew it was because we weren't having sex when I was not ovulating. But, then eventually we started trying and within a couple of months we got pregnant with my daughter.
>
> -"left the corporate world" to be a stay-at-home mom, 37, white

> We got married a couple of years after I graduated from undergrad, so I was maybe 24 or something, and we knew all along we're going to have kids, and we just always planned for it to be when I was around 30, and that's what we did…We planned everything. [chuckle]
>
> -Heather, Business manager, 37, white

In stark contrast to the many surprise pregnancies at the Satellite, these women meticulously planned their pregnancies. This non-biological preparation to have children was something that was the most apparent when just out of reach. For many of these women, "having it all" was a reasonable aspiration, and having a high-powered career did not preclude one from having a family. Just as women approached their partnerships and careers with intention, becoming successful property developers, film producers, or corporate executives, this same (often laser-focused) attention settled on reproduction as the next achievement in their lives. Many women, like in the case of Katherine, became fixated when biological reality didn't follow the timeline, becoming psychologically "stuck" if this couldn't happen when "it was time" and relied on ART not for fertility reasons, but rather to control the temporal aspects of her own reproduction.

This notion, that there is a "time" to be pregnant was an imperative enlivening clinical action at the Satellite. Yet in comparing how contraception is integrated into high-risk care we must take into account the different set-up of the Boutique and the Satellite. The Boutique is a stand-alone specialist-driven maternal-fetal medicine clinic, while the Satellite acts as a "one-stop shop" for patients, where women have both regular OB appointments and MFM ultrasounds or consultations as needed. Women at the Boutique are separately followed by an OB in conjunction with the MFM consultation provided at

Boutique. Although we cannot make a direct comparison, we can illustrate the pressure women at the Satellite encountered to plan their reproduction.

Women's plan for contraception post-birth was brought up constantly throughout the course of treatment at the Satellite. In almost every OB appointment I observed, women are asked about whether they plan on becoming pregnant again. Large posters taking up most of the wall in exam rooms outlined the different methods of birth control which providers review each time they see a patient, and whether or not a woman has been adequately counseled about birth control was a common topic during clinic meetings. There were a number of discussions throughout the day within the providers' shared office about women's birth control methods. One woman had "been using condoms for 17 years" but had not gotten pregnant. Another had been on "depo" (a birth control shot) but the resident comments that the patient probably didn't take it on time which is why she got pregnant. There is a huge condom and lube dispenser in this bathroom. I was shocked to hear a fellow and resident bring up the word "sterilization," when discussing a case. I then heard something about how "it's her first pregnancy" and they didn't continue the sterilization conversation. Although I didn't hear the term non-compliance casually thrown around in regards to contraception, a trainee physician did report that a patient is "refusing birth control."

Women were open to contraception options to varying degrees, yet a common response was respectful disinterest in birth control offered by the clinic. Valeria listens to a resident outlining the various birth control options available, yet is uninterested, and tells her providers she is "not thinking about it." The resident is direct and clear, honing in on whether her current pregnancy was planned or unplanned (it was a surprise) then asking what birth control methods Valeria had been using (condoms). Segueing into a soliloquy of all available birth control methods as "condoms didn't work too well," the resident outlines in detail the different options, ranging from shots to implants to IUDs that can be inserted during delivery if women so choose. Valeria listens quietly yet stops participating in the interaction until the resident takes in her disinterest and moves along the appointment.

In order to create as close a comparison as possible between the Satellite and Boutique in regards to contraceptive care, we can compare the contents of MFM appointments at the Satellite with appointments at the Boutique. While there were no instances where contraception was brought up to women at the Boutique, contraception care even extended to MFM appointments at the Satellite. In one instance the MFM asks the patient in the middle of an ultrasound scan, “Are you getting your tubes tied after this?” Notice that rather than merely asking about contraception, the MFM appointment becomes partially about sterilization- the most extreme and irreversible form of contraception available. In response, the patient mentions that her husband is planning on getting a vasectomy. The physician then comments, “I hope he follows through.” In another case, a MFM doctor tells a patient, “…you need some contraception…we need to work on your contraception” in response to her current surprise pregnancy at 46. The patient responds, “if I have a C-section, I want my tubes tied.” Considering her openness to birth control, the doctor moves on to the next topic.

V. Discussion

This chapter traces the push and pull of time within the main temporal sub-routines of the Boutique and the Satellite, displaying asymmetric rhythms sorted by socioeconomic class. Women approached biological reproduction differently across social classes, “reproducing” social class through different temporal approaches. Looking at the reproduction as a social process, tools of time regulation such as planning, scheduling, and self-monitoring are expected of pregnant women within prenatal care.

Following temporal examination of clinic activities across sites, we can see that expectations sorted out differently across sites. For example, poor women were not expected to comply with the main temporal sub-routine of prenatal genetic screening and diagnosis that women were expected to comply with at the Boutique. On the other hand, poor women were subject to planning pregnancy in line with how patients at the Boutique planned their reproduction. Yet the lack of collective access to prenatal genetic testing at the Satellite also indicated a discrepancy between policy on paper and policy in practice. California has one of the largest state-covered prenatal screening and diagnosis programs in the world. This "on paper" state sponsorship of care didn't have significant impact on access to PSD for the poorest women in Los Angeles.

Although the terms "non-compliance" or "compliance" are at times used outright by physicians, this analysis examines instances of interactional contention between patients and providers to examine what underlies non-compliance—specifically interactional contention that points to mismatched expectations between how providers expect a patient should behave, especially in the temporal context of this chapter. Therefore, rather than referring to women as compliant, doctors may use the terms "responsible" or "motivated." Or perhaps, providers exert less obvious forms of interactional pressure for women to make particular reproductive decisions, such as repeatedly recommending women have testing they have already declined.

In conclusion, Boutique patients have a life plan, which includes the planning of children and how this fits within it. The pregnancy itself involves much planning around officially recommended tests, the state's termination deadline, and nutritional and drug daily regimen, especially in the case of high-risk pregnancies. Satellite patients do not typically have a life plan. They take life as it comes to them and pregnancies are largely unplanned, just as they have been for most people for millennia. Likewise, they rarely take the officially recommended tests, do not plan for the state's termination timeline, and they have difficulties following doctors' recommendations about diabetes protocols or other risk-minimizing procedures, often because their work schedules do not allow them to do so. They resist providers' family planning recommendations. The health care providers at the Satellite and the state itself share the life-planning approach of the Boutique's clients, and they try to instill it to their patients. They attempt to direct them towards "responsible" practices during their pregnancy by following the timetable of the typical Boutique patient and encourage family planning. Given that the difficult circumstances of their patients prevent them from fulfilling the providers' recommendations, the patients can become "non-compliant."

Chapter 5: The Higher the Risk the Better the Picture: When Knowing More About Your Fetus Means Getting to Know Baby

What are the unintended consequences of state-of-the-art high-risk prenatal care? Drawing on cutting-edge technologies of fetal screening and diagnosis, the main project of the Boutique is "getting to know baby," as explored in chapter three. This chapter ethnographically demonstrates how the higher the risk a patient is, the more they are exposed to lifelike fetal images onscreen. As such, the social life of the fetus takes hold, and those at the highest risk of fetal demise, abnormalities, or other complications are those that "get to know" their fetuses better than their lower risk counterparts. I also examine the unintended clinical consequences of multi-dimensional fetal ultrasound, as its lifelike visual imagery can disrupt patient-provider communication.

When examining the literature of reproduction, social observers of high-risk reproduction have focused mainly on genetic risk, as the geneticized fetus and its social intricacies has been of interest to scholars for decades (Markens et al, 1999; Markens et al, 2009; Rapp, 1999). The intersection of obstetric ultrasound and high-risk reproduction remains sociologically unexplored, yet the primary technology of monitoring and evaluation of any pregnancy regardless of risk is obstetric ultrasound. Although routinely used as a standalone technology of prenatal assessment such as measuring fetal growth and position, genetic testing during pregnancy is highly reliant on ultrasound to yield actionable results—from projecting how a genotype transfers to phenotype to allowing a physician to extract amniotic fluid or placental tissue safely from the womb for genetic sequencing. However, ultrasound is so institutionalized as routine that unlike other prenatal testing technologies such as fetal genetic screening and diagnosis, the procedure does not fall under biomedical conventions of informed consent.

The Social Nature of Obstetric Ultrasound

As a traditional site of fetal celebration, obstetric ultrasound also has a powerful social and emotional component in Western reproduction; ultrasound exams are a chance to "bond with baby." Fetal ultrasound has such a rich social life that its reaches are far beyond the clinic. Commercial providers of non-diagnostic ultrasounds provide an opportunity for women and families to pay out of pocket for 3/4D 'keepsake' fetal pictures and movies of the womb.

A rich body of work details women's prenatal experiences, in *low-risk* populations with fetal ultrasound. For example, Lisa Mitchell's *Baby's First Picture: Ultrasound and the Politics of Fetal Subjects* is an ethnographic dive into women's experiences with 2D fetal ultrasound in Canada. Her work centers on how grainy grayscale "blurs" of the fetus are not "natural" but rather "produced" by sonographers so that parents can "see" the image of a "baby." Past scholars examining ultrasound highlight the contingent nature of this interaction: Without such "interpretation" by a sonographer in addition to the collaboration of the parents confirming the "blurs" as meaningful visualizations of prenatal life, fetal ultrasound fails to convey objective meaning (Beynon-Jones, 2015; Mitchell, 2001; Taylor, 2008; Rothman, 1993). Yet, the scholars of abovementioned works mainly focus on routine cases and routine two-dimensional ultrasounds in low-risk populations.

Along with higher risk comes better resolution in elite prenatal care. The state-of-the-art landscape of fetal visibility includes a lifelike overhaul of the iconic black and white two-dimensional ultrasounds. Modern obstetric ultrasound technologies allow expectant parents and clinicians to 'see sound' much more vividly; three and four-dimensional technology provide a peek into the womb in high-definition and in real-time; rendering fetal images as objectively more concrete and therefore 'real'—concurrently providing increased diagnostic capability in tandem with 2D findings. This means that as women are having CVS or amniocentesis at the Boutique to potentially decide whether to terminate a pregnancy, or find out devastating news, they are "seeing" their baby on screen in multiple dimensions.

Routine and Central

Obstetric ultrasound is as routine within prenatal care as monitoring maternal vital signs through a blood pressure cuff, a thermometer, or a scale to track weight gain throughout pregnancy, particularly in the treatment of the high-risk pregnancy. The high-risk label means that women move to a biomedical category requiring greater and more surveillance during pregnancy than women deemed low risk through various screens, tests, and ultrasounds. An essential, if not central tool within this cluster of surveillance technologies is obstetric ultrasound.

And regardless of what level of risk a pregnancy is, obstetric ultrasound is the most comprehensive tool of prenatal monitoring available. Initially established in the 1970s to screen for fetal anomalies and a method of sex determination, ultrasounds are a primary tool of prenatal screening and diagnosis from the first trimester until birth—tracking heartbeat, growth, movement, and a vast array of key maternal-fetal indicators such as level of amniotic fluid, placental positioning, and presence of infection. Adapting sonar technology used by submarines to identify the size and shape of objects underwater, ultrasound technology applies these methods of "seeing sound" to the inner workings of the womb.

Obstetric ultrasound also served and continues to be the technological gateway to the medicalized pregnancy. For one, sonograms unveiled a formerly mysterious and private process of pregnancy visually therefore medically. Exposing the inner workings of the womb caused a "technological quickening" that superseded or replaced the natural "quickening" women experienced physiologically. Others and the mother see a fetus move on screen before a women can feel anything within the womb, which meant that this visual information gathered directly from a technology surpassed women's personal evaluation of symptoms during pregnancy.

Many innovations in prenatal care are accessories to ultrasound, which acts as a lynchpin holding together a cluster of prenatal screening and diagnostic technologies. Ultrasound plays a comprehensive role in the monitoring of risk—even genetic risk. Invasive fetal genetic testing (such as amniocentesis and chorionic villus sampling) requires ultrasound technology to track the movement and position of the fetus in the womb to draw out genetic material for sequencing from an expectant mother's womb, while Doppler technologies analyzing blood flow within the womb and fetus are appendages to ultrasound machines.

Fetal genetic data only becomes interpretable in utero through sonograms, and newer noninvasive genetic screening through analyzing a drop of mother's blood for fetal genetic fragments advise use of ultrasound in conjunction to draw meaningful conclusions. While genetic testing yields abstract data about the likelihood of a fetal anomaly, ultrasound observations can lead to phenotypic projections and ultimately the chances a life will flourish outside of the womb. In short, fetal ultrasounds are a primary and mediating technology by which expectant parents find out about health or disease during pregnancy.

Yet obstetric ultrasound also occupies a socially unique position in prenatal care. As meaningful socially as they are clinically significant; women and family members experience images produced by ultrasounds as 'baby's first picture,' documenting early life in the womb (Mitchell 2001, Taylor 2008). Patients experience fetal ultrasounds in the medical context as 'pleasurable' (Roberts et al., 2015), is linked to the father's involvement in pregnancy (Draper, 2002), and is the intermediary technology between images of the fetus, narrations of kinship, family resemblance, fetal personality, and a cultural rite of 'bonding with baby.'

From Two to Three and Four Dimensions

Three and four-dimensional images displayed during Boutique appointments are objectively more concrete and therefore 'real,' rather than subjective 'blurs' or two-dimensional ultrasound. Two-dimensional ultrasounds depict the anatomical insides and fetal outline in shades of grey. Doppler ultrasound technology often used in tandem to visual ultrasound means that expectant parents hear fetal heartbeat as early as six weeks gestation while potentially viewing the fetus in such high resolution.

Beyond the classic white and black 2D imaging, 3D imaging is created by combining splices of 2D images. Four-dimensional ultrasound pieces together 3D imaging to create a real-time movie of the fetus in womb. There is also "high definition" enhancement of 3D technology, creating a vividness resembling that of a newborn. Washed in flesh-like tones, the complexion of 3/4D ultrasounds speaks to the production and design of state-of-the-art fetal imaging as not only more realistic but designed to evoke images of a baby rather than fetus.

Yet akin to 2D imaging, studies document how based on positioning of the baby and skill of sonographer, photos of the fetus in 3D and 4D can be less than ideal and still must be produced rather than simply 'exist' as a fetus (Roberts, 2012). Even 4D ultrasound requires 'collaborative coding' that calls for interpretation of facial expressions and lifelike movement (Roberts, 2012) for 'blurs' to see 'baby' mediated through the technology.

Overall, research examining the clinical capability of 3D ultrasonography is conflicted (Tonni et al, 2016). A review by Reissland (2014) identifies how this lack of clinical understanding of 3D visuals leads to the coding of fetal movement, structure, and expression during 3D ultrasounds and technologists to read 'results' in emotional rather than clinical terms during prenatal appointments.

The realism of 3 and 4D imaging, perhaps in combination with a dearth in knowledge of the clinical uses paved the way for ultrasound to move from the clinic to the commercial, where the technology is used non-diagnostically to offer a ‘pleasurable’ (Roberts et al., 2015) experience of ‘bonding with baby,’ further blurring the boundaries between the fetal ultrasound as medical and social; and in turn, intensifying the tension between the powerful diagnostic capability of ultrasound and the social meanings produced during clinical interaction.

Social observers and clinicians alike problematize the co-opting of 3 and 4D technology as a consumer good, used as ‘entertainment’ rather than viewed by patients as a clinical foundation of prenatal care. Multiple professional medical groups have come out with statements against the use of 3 and 4D outside of clinical purposes (Society of Diagnostic Medical Sonography; American Institute of Ultrasound in Medicine; The American College of Obstetricians and Gynecology-Thomas). Through ethnographic work in a private prenatal clinic in the U.K., Thomas (2015) argues that 4D technology used in clinical care has transformed the prenatal clinic into a site of consumption overriding the medical.

What are the implications of enhanced fetal realism in elite, high-risk reproduction? Scholarship explores such comingling of the social and clinical in low-risk pregnancies—but what are the implications, both clinically and socially, of this comingling when a pregnancy is designated as high-risk? Drawing on observations and interviews from the Boutique, the following chapter examines a paradox of prenatal care: patients at the highest risk of fetal anomalies are precisely those that “get to know” their babies the best through repeated exposure to advanced fetal imaging in the name of clinically “knowing more” about the fetus. Patients that are at most risk of losing their fetuses are as a side effect of the visual nature of technology, bonding the most to their babies onscreen.

I. The Ultrasound as a Fetal Celebration

A couple in their mid-30s is in clinic for a 20-week anatomical ultrasound. The anatomical ultrasound is the most important ultrasound of the pregnancy, as clinical guidelines recommend this as the “one standard” ultrasound all women should have during pregnancy. The exam is done between 18 and 22 weeks, as the fetus’s limbs and organs are developed enough to be measured (Jabaz & Abed, 2022). The following field note excerpt depicts an index case of a routine anatomical ultrasound where no anomalies are clinically indicated:

> As Dr. Merritt picks up the transducer, she tells the couple the ultrasound is to make sure “everything’s put together.” A fellow had come in earlier to do the main scan, while Dr. Merritt came in to double-check the measurements and communicate the results to the couple. Dr. Merritt remarks that the couple has a “very photogenic kid.” The image she is looking at looks like it’s from a movie; the flesh-toned color of the ultrasound and the fetal positioning looks like a little baby curled up in the womb.

Later in the appointment Dr. Merritt does another live, 4D scan and the baby has moved—this image is grotesque, and the baby looks like it is melting suspended in space as a deformed alien, as it takes skill, time, and luck to get “cute” baby pictures with the 3D and 4D scans. If the baby moves from certain positions, the image can easily look as if it is “melting.” She then switches to medical components: talking to the patient about a fibroid that “at this size” she is “not worried.” The patient and Dr. Merritt have a brief discussion about the fibroid telling her she “should know about it, but most don’t affect pregnancy.”

She continues with the medical portion of the scan and remarks on the "beautiful ankles" which "tells me there is no club foot."

The rest of the appointment is devoted to getting good pictures of the baby, which has turned in the womb into a less photogenic position than previously. The patient talks to the TV screen and says, "Come on girl, look at us." Dr. Merritt says, "let's try having you turn towards me" [to make the fetus move into a better position for a picture] and the patient turns from her back to lie on her right side. The baby moves and Dr. Merritt comments, "ah, there we go, that's a cute one."

Dr. Merritt spends about half of the appointment devoted to getting good pictures. As is customary, the parents received printouts of the "best" pictures of their baby taped to the inside of cards with cartoon teddy bears on the front. The parents are also sent emails of the videos and the pictures taken during the appointment, which physicians will explain to parents while they receive simultaneous "pings" on their cellphones and appointments are wrapping up. A big part of the experience is creating these mementos, especially when the health of the baby seems pretty absolute.

This mixture of social engagement with the fetus, as a chance for the parents to get a portrait and even a video of the baby, does not cause tension in situations such as this where the fetus is deemed "normal." Furthermore, note the mixture of aesthetic language to communicate key medical results, such as Dr. Merritt's use of the term "beautiful" to describe the fetus's ankles. In other appointments, physicians' note the fetus's "gorgeous" heart, and remark "he's great" to reassure parents that a baby is anatomically normal. Dr. Merritt also refers to the fetus as a "kid." The patient above also must have had early genetic screening as well, and by this point both physician and patient are calling the fetus "girl" as the sex is already known.

Fetus or Baby?

Although I use the term fetus throughout this analysis, I only encountered the term during physician-patient encounters of the highest risk. During appointments, physicians and sonographers talked about the “baby” on the screen. Once there is a high-risk determination the language around the pregnancy turns clinical. Clinicians and patients alike discuss the technicalities of their pregnancies in fetal terms. Physicians recommend a “fetal echo” or “fetal MRI” not a “baby echo” or “baby MRI.” Women themselves mirror this switch between speaking about the fetus clinically versus socially.

When Shawna received positive results on Non-invasive testing (NIPT) and amniocentesis for Trisomy 21, she discussed her results in terms of “the fetal cells,” and when Elizabeth received an inconclusive on NIPT she talked about how it was a result of there being a “low fetal fraction” within her blood. As providers must toe the line between the clinical and social during scans, managing how to communicate risk can become rhetorically complex. Just as the term “baby” signifies personification of the fetus, the absence of a person reference at all (noticeably thin in Stephanie’s case) signifies depersonification. Different fetal person references can be used to passively communicate elevated or dialed down risk to patients.

Helen was carrying twins with a 30% growth discordance between them, gravely worrying the doctor. For a period of 2 weeks, Helen came in twice a week for ultrasounds to monitor the growth. When her physician found that the smaller twin was developing anatomically normally, the doctor asked Sarah if the twins had “names” as she had been calling them “Baby A” and “Baby B” during exams. Dr. Merritt even used the term “kids” in later appointments while narrating her ultrasound findings when the smaller baby had caught up to a relatively normal growth percentile.

Sonographers in particular use affectionate talk during medically normal exams to build rapport with patients, remarking that “she has her daddy’s nose,” commenting that “she’s shy” or “she’s sleeping” as they do not deliver clinical results during the scan. In these situations, the high-resolution technology forces the ultrasound providers’ participation in the exam as a chance for parents to meet their babies projected on a large TV screen.

Olivia is particularly elated during her ultrasound, as she just received news that a previous genetic screen was a false positive. She is recording the ultrasound for her husband, narrating her baby’s movements: “She’s like, don’t look at my face!” telling everyone “It’s good to see her, it’s been awhile…show Daddy how you want to hide… she is being demure.” The baby’s legs are crossed, and Olivia exclaims, “Look at her legs so long and crossed.” The sonographer can’t help but participate, commenting, “She’s being a lady.” Her physician also plays into Olivia’s happiness, showing her a movie of her fetus moving in the womb using 4D ultrasound.

The subtle language used during high-risk situations changes along with the tone of the appointment. For example, Grace and Leon were in the office to have an invasive test following a positive screen for a genetic anomaly. Most patients know sex early on in the pregnancy following NIPS results, so as early as 10 weeks they start referring to not just the baby but “she or “him” or “boy” or “girl.” During her CVS, Grace becomes worried that the fetus will feel something as the long needle enters her belly to scrape placental tissue for genetic sequencing to follow up on the high-risk screening result. Grace asks Dr. Clark, “The baby won’t feel anything?” To which Dr. Clark answers, “Every time we ask him it says no.” Dr. Clark both personifies and dehumanizes the fetus in the same comment, noting the sex but also that the fetus is an “it” that doesn’t or isn’t able to feel or communicate pain. Although Grace is only 13 weeks pregnant, she and Dr. Clark are already referring to the fetus as “him.”

Most women in this study enrolled at the Boutique had uncomplicated pregnancies. As such, most women experienced prenatal care as both medically reassuring and socially meaningful—even in this high-risk context. Yet how does this duality, this hybridity between the medical and social, play out when physicians and patients encounter signals of elevated risk? The chasm of experience between something being "wrong" and "normal" is particularly acute in this setting because the clinic organizes ultrasounds as a way of "getting to know" your baby.

Bonding with Baby

I met Rachel before her anatomical ultrasound. She is a teacher and an actor. At 37, Rachel is high-risk due to two previous miscarriages and her age. Following her first pregnancy loss a fetal autopsy uncovered that the miscarriage was a result of Turner Syndrome and a number of other genetic anomalies. Consequentially, she has been "staying cool" during this pregnancy; working to be "realistic about what could happen" and trying to "control emotion." She is hiding the pregnancy from her daughter and does not speak of her pregnancy often with her husband, even though she is 22 weeks along and showing. Rachel exemplifies the experience of the "tentative pregnancy," where women emotionally labor to disconnect from their pregnancies as uncertain (Rothman, 1996). However, Rachel is unable to "keep it cool" during the appointment, as the ultrasound unleashes her pent-up emotion:

> Dr. Merritt illuminates the heart's structure, narrating that there is "nothing leaking between the chambers." She announces that she is taking an "extra close look at the heart," stating that this is because the patient had a previous pregnancy with Turner Syndrome. Rachel starts crying. The ultrasound images are particularly enrapturing

> since baby is in a classic fetal position, and vividly looks like a little baby nestled within the womb on the large high-resolution TV screen. Dr. Merritt asks if Rachel knows the sex. She does. Dr. Merritt remarks that the “little boy flashed himself on screen as boys do” and was wondering if she had seen it.

Rachel really starts weeping as Dr. Merritt switches over to 3D scanning from the classic black and white imagery. Here we see the boundaries of the “tentative pregnancy” pushed by the powerful visuals offered by modern ultrasound. Although scholars write of the “liminal” nature of prenatal life (Morgan, 2009), we see how for women it is very difficult to relate to a pregnancy as “liminal” when it is so visually apparent. The technology evokes deep emotion from Rachel:

> Dr. Merritt turns on the 3D image, which displays in flesh-toned high resolution the patient’s fetus. Rachel’s face lights up with elation and in awe, and she says, “Oh WOW look at that.” At this point, her tears turn to outright weeping with joy and she has her hand over her face. Rachel is effusive with wonderment. She waves her hand at the screen while saying “hi” to the image of her baby and is crying. Dr. Merritt closes the encounter, stating quietly and tenderly “I have no concerns.” Rachel replies, “thank you so much” and is very emotional and still crying.

Signals and Silence

Following the ultrasound, Rachel cried on and off throughout our interview. Dr. Merritt’s tender rather than clinical language during the exam deeply touched her. Rachel recalls during her last pregnancy there was no heartbeat during an ultrasound, which is how she found out she would miscarry: “I know the feeling too well of coming in and the doctor, it's like the same thing, they're really excited to look at the baby and everyone's looking at the screen and so happy, and then there's silence. I'm so afraid of that happening again.” Rachel carries this silence with her into daily life, saying “we have been strangely quiet” about the current pregnancy in response to her last miscarriage: “I hate that it's such an awful position to be in, to be having a conversation with someone who is clearly pregnant but not having said the words, because you don't want to make that mistake of saying, "Are you pregnant?" and the person says no.” She talks about how she is “protecting” herself from “un-telling” people about her pregnancy.

The silence is particularly glaring during Stephanie’s appointment. An ultrasound depicts thickening of her fetus’s neck (an indication of possible developmental problems), which the fellow describes as a “challenging case.” During the preliminary ultrasound, the fellow scanning was quiet and tense. She did not say much to the patient, and spent a lot of time looking at the heart and the neck to check for fluid build-up. She left the exam room and did not offer an explanation, instead telling the parents that Dr. Clark would be in shortly.

While waiting for Dr. Clark to finish with another patient, the fellow showed me ultrasound shots collected from this patient and compared it to normal looking scans. The neck did appear thickened compared to the normal shot. She said that the fetus had cystic hygroma, meaning there is fluid buildup in the heart. She mentions that the clinic physicians are not quite sure what to do about it and mentions that she “is not sure what I would do in this situation.” The case, she says, is ambiguous. She mentions that there is no genetic diagnosis, as all genetic tests came back normal. However, such neck thickening is associated overall with developmental delay and neurological problems. We go back into the room with Dr. Clark. He doesn’t say much, but says things look “normal.” He tells the parents that plenty of people walk around with cystic hygroma, and that "it is something that can be fixed." The parents are visibly relieved, and Stephanie lets out a sigh.

Dr. Clark then focuses on the ultrasound scan, not narrating as he goes, and ignores the patient when she asks him if her baby is normal. The patient becomes agitated, asking Dr. Clark, "Is my baby normal?" and then three times whether the "ears are normal" before getting a direct answer. Dr. Clark finally affirms that the image "looks normal" but does say that they should have a third physician take "a look." Notice the absence of Dr. Clark and the fellow's narration of the scan. Even though the physicians know the sex of the baby, they do not use gender specific pronouns while communicating with the patient. Rather, the ultrasound in this situation is purely diagnostic, as social meaning takes a backseat to interpreting the ambiguous signals of elevated risk in the patient's fetus.

This also means that unlike other expectant mothers, Stephanie cannot interpret the ultrasound images as other patients do. Stephanie cannot decipher the different anatomical parts of even the 3D scans and finds them more troubling than reassuring. The patient mentions that the ultrasound images from her last scan "don't mean anything" to her. She "spent hours looking" at the scans done earlier in her pregnancy to discern whether "the ears are normal or not" (she is now at 22 weeks). Perhaps because the sonographer in an earlier scan was not as focused on getting "cute" pictures because of the signals of elevated risk on the scan, the patient mentions that to her the face looks like it is "melting off."

II. Clear Picture, Clearer Risk

In Moira's case, her high-risk complications cause clear and stunning images of her fetus. Moira is 33 weeks along, yet her baby is measuring at 37 weeks, and according to Dr. Merritt "looks like a full-term baby." The following field note excerpt depicts how the clear rendering of the fetus exists only because of the patient's advanced case of gestational diabetes (GD), which could result in a "true emergency" during delivery:

> Dr. Merritt tells Moira that her "numbers [blood sugars] are way high." The patient has not met with a dietitian to manage her blood sugars. The patient realizes now that GD is probably why both her babies came early, and must have had GD for both her previous pregnancies. Moira wrote down what she has been eating. Dr. Merritt remarks about pancakes and maple syrup that are on her list, and in a friendly and joking way tells her to "not hide foods" she is "eating from us...[we]need to know." Dr. Merritt says something about how pancakes and maple syrup are not what she should be eating. At the end of the appointment Moira looks at the food list and jokes about how last night she had no dinner but ice cream, says it "sounds delicious" but says something to the effect that that won't help her diabetes. The fetus's face is very sharp on the ultrasound image. Dr. Merritt remarks how "cute" the baby is but "we got to get these cheeks to slim down." I have never seen such a beautiful and clear image of the face, which in this case showed facial features that could be identified as coming from the mom or the dad.

The couple is lovingly looking at the large screen, captivated by the image of their baby. In order to reorient the couple to the clinical issues at hand, Dr. Merritt shows patient and husband her screen with percentiles, which is directly connected to the ultrasound machine, not projected on the large TV screens. The couple must turn their head away from the moving image on the TV screen to direct their attention to Dr. Merritt's screen. She narrates that "what worries" her is that "the baby's abdomen measurements are coming in at the 96.3 percentile." The fetus has a belly and is "really round in the middle" just as adults with diabetes have. She tells them that if the "head comes out but the body gets stuck" during delivery that is a "true emergency."

The photogenic picture at odds with maternal-fetal health is further complicated by the sonographer's interactions with the couple, since the sonographer cannot deliver clinical results during the exam. The sonographer comes into an appointment I observed a few days later. Taken aback by the beauty of the ultrasound images, she is even more engaged with the parents and the screen than. usual, telling them, "He has daddy's nose:

> I observe the sonographer doing the scan before the physician comes in. She tells the couple, "You know what's funny? You can get facial expressions." She tells them she can see "smiles" and "frowns." As she zeroes in on the face of the baby she says, "we're getting a pout." Says they have a "chill baby" and that "he's calm right now" and that he's "probably napping." A few moments later Moira says, "He's waking up-I felt it." Sonographer responds, "It's this little massage" –meaning the ultrasound probe on the belly. Sonographer talks out loud: "So cute…those chubby cheeks are adorable…he's one chubby baby, how big were your others?" She asks, "do you ever talk to him?" and remarks he has "daddy's nose."

Returning to Dr. Merritt's interactional predicament: How does she handle the irony that the cutest pictures are caused by advanced gestational diabetes? Additionally, the patient is at risk for preeclampsia, which she had during her last two pregnancies. Preeclampsia is a serious condition for both the mother and the baby that can sometimes be fatal. Dr. Merritt is "worried" about this as well, as she tells me before walking into the exam room together. Dr. Merritt flips the meaning of the "cute" pictures on their head, and tells the parents, "…it's never a good sign to have such good pictures, as it means the amniotic fluid is high: She live scans her belly and comments about the “cute little chubby feet.” She also says that the “rolls on the forearms are what we want to fix” “before, not after” delivery and that “amniotic fluid is on the high side but that’s what we’re trying to fix.” The image is crystal clear in a way I have never ever seen in other appointments.

III. The Higher the Risk the More Real the Baby

Liana and Scott received a positive result on an early genetic screen indicating that their fetus had a 99% chance of having Down Syndrome. Both are occupational therapists working for the local school district, providing and managing aid for disabled children. Their knowledge of both the potential and limits of disability, and availability of services made the decision to continue their pregnancy very difficult. Liana is “really traumatized” as the “choice is awful” to keep or terminate the pregnancy, yet they are “leaning towards termination.” Scott tells me they are “hoping to get a definitive answer before we make a complete, final decision as far as what to do here,” as they still have not had a diagnostic invasive test. Liana and Scott were in the clinic for diagnostic testing.

This is particularly difficult in light of their fertility journey. Scott and Liana have spent thousands of dollars on fertility treatments. Liana refused to believe the pregnancy was “actually happening” before an ultrasound at 6 weeks, where she actually got to “hear the heartbeat,” even though she had taken three positive pregnancy tests.

Meanwhile, Liana and Scott are “getting to know” their baby onscreen. Since Liana had an early screen, not a diagnostic test for Down Syndrome, she is under heavy medical surveillance. She tells me, “We didn't do this many ultrasounds before [during her last pregnancy–which she eventually miscarried]. I know people don't do as many ultrasounds as I've had. This is our fifth one, I think, in 11 weeks.” Indeed, Liana is in the “highest” of the “high-risk” category, which sends her on a path towards more testing until more definitive answers can be had so that she can make as informed a decision as possible whether to keep or terminate the pregnancy.

Yet, Scott in particular is trying to balance “knowing more” with not getting to know his fetus too well. As soon as the sonographer walks in to start the scan, he asks her, “Can you please make sure that we don’t see the sex of the baby?” –A request he repeats as the physician walks in 15 minutes later. In a later interview, he shares that learning the sex of the fetus would have been too much for him to handle considering that termination was on the table. Scott is also weary of the large high-resolution TV screens. Chatting together before their appointment, Liana mentions, “I like to see it on a giant screen like this.” Scott is conflicted, telling us: “It's wonderful until you see something that could be very wrong. At that point, it switches from being wonderful to being frightening, which I hate to say because, I don't know, it's like ... I don't know. I can't talk about it because I'll start tearing up again.”

We stop talking as Dr. Clark enters the room for their check-up, looking serious. Making his upcoming silence explicit he picks up the transducer and prefaces with, “I’ll be quiet for a second then we’ll talk.” Previously, the sonographer had come in, silently taking measurements. Unlike in other appointments, she was not cooing over the baby with the parents about the images on the screen.

Dr. Clark takes measurements for a few minutes. I see him taking dopplars [checking the fetal heartbeat] and there is no blue and red color that shows up on the screen as there is no heartbeat. A flat line where the jagged line is supposed to show on the screen, and static when you are supposed to hear the heart thump. I did not quite know at the time that I was observing this that this was happening, even though I have seen many appointments.

At this point, Dr. Clark informs the couple that they have lost the pregnancy, telling them that, “…you know your test was positive…which puts a very high risk that there is something definitely [going on]. The thing that I see that is certainly suggestive that it probably is a correct answer [the patient's fetus had down syndrome] is the fluid here behind the body." He tells them the fluid buildup is "very large…and what's obviously more significant is when I put the color on, you don't see the colors on the baby's heart." Dr. Clark then shows a picture where there is red lighting up at the bottom of the screen, but the red is not on the baby's heart where it is supposed to be. The following interaction ensues:

> Liana: Did the heart stop?
>
> Dr. Clark: The little baby's heart stopped. So it was probably definitely an abnormal [pregnancy]. The swelling is a very significant sign of Down Syndrome…. Nature is pretty smart… with survival of the fittest takes place.
>
> Liana responds, "Yeah I was telling [Scott] if there's no heartbeat that makes that decision."
>
> Dr. Clark: "It's never a good decision"…says that it [the miscarriage] "makes the decision easier" some people are faced with a "very hard decision…clearly as we look at this and reflect on this one it's definitely, the suspicion is great, it's there [the "it" is Down Syndrome].
>
> Scott at this point is weeping. He asks, "Is that what you did that line that was that looking for a heartbeat?"
>
> Dr. Clark: I put the color on. You'll notice—I'll show it so you can see.
>
> Liana: I'm familiar with those colors
>
> Dr. Clark: So here's the colors going in there. Do you see the blue and red [He shows the red color blob on the black and white corner of the screen]? There should be color right there [points to the baby's heart] and you don't see any movement. Dr. Clark reiterates that you are "seeing any movement there is no movement" and there

> is “nothing, that line should show some movement where the heartbeat is supposed to be.
>
> Liana: When did it stop?
>
> Scott: We heard a heartbeat [at an earlier appointment, weeping]
>
> Dr. Clark: This could have been up till this morning theoretically. In terms of gestational size, size is appropriate for the size that it should be.

Dr. Clark moves to comforting Liana and Scott, telling them, “It was sick before then.” Scott is weeping, as it sinks in that they have lost the pregnancy. Natalie tells me that, “The saddest thing I think was hard, it was hard, I think, to see... The week before we saw it moving around, that's the first time I saw anything moving,” as she knows at some point the baby was alive and moving within her. The couple has now spent time “getting to know” their fetus, seeing it move, and hearing the heartbeat, as have Jessie and Emma.

Both Jessie and Emma found out at 11 weeks that their fetus was at high risk of having Turner syndrome, a genetic anomaly where a female has one X chromosome rather than two. With a highly variable phenotype, some miscarry as a result of Turner syndrome, while others graduate college and live normal lives with the diagnosis. Symptoms range from heart issues, to infertility, to kidney and vision problems. Both women were emotionally affected by the up tic in ultrasounds dictated by clinical protocol following the high-risk result to check for Turner syndrome-associated complications.

Although in low-risk situations fetal imaging is a celebratory process, the consequence of ‘knowing more’ medically about their fetuses means expectant parents with high-risk pregnancies ‘get to know” their babies the best. Jessie describes “very mixed emotion” while having the “best ultrasound we’ve ever had” following the positive screening result, “hearing the heartbeat” and “seeing the little advancements the baby’s making.” This was especially difficult as she was thinking about “what decisions we’re gonna have to make in terms of terminating.”

The impact of ultrasound was even greater for Emma and her boyfriend. Emma comments that the visual nature of the ultrasound influenced her decision-making around termination, as she “…knew I wouldn't want to terminate after seeing the baby at 10 weeks…It's a baby. It's moving around and has a heartbeat.” Emma also notes the difference between ultrasounds at the Boutique versus those at her regular OB due to the multi-dimensional nature of the machinery at the Boutique: “I like to come here because the ultrasound machine is so much better here than at my OB so you actually get to see more of what she looks like. So it's exciting but …” The genetic result was also at the same time a gender reveal, and by 11 weeks Emma was referring to her fetus as a “she” throughout the interview.

Jessie and Emma experienced tension between having the most ultrasounds explicitly because a pregnancy is most at-risk and experiencing the “bonding” aspect of ultrasounds as a result. As Jessie mentions, the most “careful” and “precise” ultrasound that she commented lasted longer than usual precisely because her fetus was at-risk.

IV. Discussion

The chapter investigates a paradox of elite prenatal care: use of high-resolution ultrasound with the aim of helping women make informed reproductive choices in this highest risk context has emotional side effects: “knowing more” about their fetuses results in parents “getting to know” their babies. The gradual clarification of their fetuses through prenatal surveillance is meant to help them decide to keep or terminate a pregnancy, or perhaps point to inevitable fetal demise or miscarriage. Thus the more “at risk” a pregnancy is, the better expectant parents “get to know” their fetuses through increased technological visibility.

Besides serving as clinically diagnostic, fetal ultrasound has long been regarded as a “social ritual” in the United States (Mitchell 2001, Taylor 2008). Providers and parents alike collaborate to create a scene of “bonding” to the fetal image, enhanced by the sharper and more life-like imagery of 3D and 4D ultrasound technology. Although in low-risk situations, this blending of social and medical is unproblematic, there are consequences for women experiencing high-risk pregnancies.

This experience is complicated by the social meanings ascribed to ultrasound. Providers “code switch” to clinical language from that of a fetal celebration and must then navigate rhetorical terrain that is enmeshed with language meant to highlight the emotional bond felt by parents when viewing ultrasound images. The switch, however, requires interactional work on the part of the physician. Parents must also “code switch” to understanding the ultrasounds as clinical rather than social, which comes with anxiety and fear. Regardless, they “get to know” their fetus better through further testing, making the pregnancy feel “more real.” The technology alters the context of the choice, adding to parents’ emotional experience of pregnancy as one colored by fetal personhood.

These findings also require a revision of Rothman’s (1993) concept of the “tentative pregnancy,” –where women that have amniocentesis feel they only “tentatively” carry a pregnancy or experience the fetus as “liminal” (Morgan, 2009). Women in this study experienced pregnancies of higher risk as not more tentative, but less tentative, as the same technologies that “test” the fetus also enliven a baby. With the advent of genetic screening as a “new hybrid practice,” finding out the sex of a baby early on in a pregnancy layers a new aspect of personhood to the already crisp visuals of 3D and 4D ultrasounds for expectant mothers and fathers.

The nature of emergent prenatal technologies reconfigures women's experience of pregnancy. Through a combination of these technologies "forcing" the hand of providers through powerful visuals and culturally ascribed meaning, women that are of the highest risk to lose their pregnancies are those that experience their pregnancies as more "real." "Knowing" in a medical and visual sense is closely intertwined with "getting to know" their babies on a social and emotional level. Indeed, these technologies create a vivid social birth that precedes the biological (Morgan, 2009). Therefore, as women become closer to encountering the "choice" or "decision" to terminate, or closer to pregnancy loss more generally, they are also those women enrolled in prenatal care that experience front-row seats to their developing fetus.

Chapter 6: The High-Risk Pregnancy in Two Americas

In a clinic in one of the wealthiest cities in the world, Zara, a white woman married to a business mogul, undergoes fetal genetic testing during pregnancy at the Boutique. This is following in-vitro fertilization (IVF) of already genetically tested embryos to make sure that she does not give birth to a disabled child. She had IVF not for fertility reasons, but to assure she would have a boy after two girls, outsmarting nature's decision-making through technologically mediated conception. Fifteen minutes east of the Boutique, Valeria, a Latina woman, finds out in her third trimester that she is having a baby with Down Syndrome. The doctor makes sure she is taking her iron pills as prescribed to treat her anemia. Valeria underwent three blood transfusions while hemorrhaging during the birth of her second youngest boy, due to untreated anemia. Hemorrhage during childbirth is the second leading cause of maternal mortality in the United States (Trost et al., 2022).

These are the lives and stories behind the high-risk pregnancy in Los Angeles, California, collected during my fieldwork at sites representing the extreme ends of the socioeconomic gradient. Through a string of referrals and out-of-pocket expenses, Zara and other wealthier women seamlessly accessed highly specialized prenatal treatment throughout the course of pregnancy, even for minor signals of elevated risk. Valeria and many other women at the Satellite brute-forced their way into high-risk prenatal treatment, jumping through bureaucratic hoops to access the Satellite. Yet the Satellite is an island of high-quality, high-risk prenatal treatment that is hard to come by anywhere within Los Angeles and surrounding counties. For some, it is a 5-hour drive to receive the necessary high-level of care for the maternal/fetal complications covered by public insurance.

This dissertation draws on ethnographic methods and in-depth interviewing to offer a sociological examination of high-risk reproduction when wealthy and poor in Los Angeles.

The priorities, resources, and challenges of each field site are distinct, representing different worlds and “two Americas.” The Boutique is situated at the forefront of technologically mediated reproduction, constructing the fetus as “at-risk” through cutting-edge genomics. The Satellite attends to the many risks low socioeconomic status imparts on expectant mothers—whether it be housing, drug use, or late access to high-risk prenatal care. I then examine my sites side-by-side, to review what we can learn about stratified reproduction through a comparative lens.

Although ethnographic methodology used in the present study has many advantages, such as producing in-depth knowledge of the life and world of the high-risk pregnancy with nuance and granularity, there are limitations. As solely responsible for data collection and analysis, findings presented are subject to my personal biases and positionality. My socioeconomic status as a student in a graduate program at an elite institution was more in line with patients at the Boutique than those at the Satellite. However, as a second-generation immigrant growing up with social capital yet lacking in material wealth, I was able to find common ground with many women at the Satellite. Another limitation is related to sampling methodology: women self-selected to participate in this research. Those that chose to participate in this study may have underlying similarities that bias the data collected and therefore results. Additionally, ethnographic data collection focusing on two sites of study may limit the generalizability of findings. However, the ability to extract “deep” knowledge related to variation, outliers, and constructing an understanding of what is considered “noise” in quantitative analyses offer a valuable perspective when identifying the sociocultural meaning of what lies beyond the average and related confidence intervals.

I. Overmedicalization for the Wealthy

High-risk prenatal care for the wealthy is defined by its technological surrounds. Many women at the Boutique underwent heavy technological processing before walking through the doors of the clinic. With out-of-pockets expenses often reaching tens of thousands of dollars, women drew on an array of assisted reproductive technologies (ART) such as in vitro fertilization (IVF) to conceive through science rather than sex, using this science to choose which embryos might become children and which will remain cryogenically frozen. This sub-category of the high-risk pregnancy is iatrogenically generated, as IVF comes with risks ranging from premature delivery and low-birth weight to miscarriage and ectopic pregnancy (American Society for Reproductive Medicine, 2019). Thus, these women are automatically enrolled in high-risk prenatal care from the start of pregnancy.

Women underwent multiple rounds of prenatal screening and diagnosis with an emphasis on fetal genetic testing and ultrasound during their time at the Boutique. As explored in chapters 3 and 5, the process of elite prenatal care is defined by “getting to know baby.” Yet “getting to know baby” comes with its own collection of risks. For one, this constant appraisal and re-appraisal of the health of the fetus made women feel a constant sense of anxiety that their pregnancy was in jeopardy. And second, women that were at the highest risk of fetal anomalies and complications had the most exposure to this fetal testing, and the visual (ultrasound) and social (sex) information that goes along with this testing. The result is a growing attachment to the fetus through the same process that the viability and health of the fetus is called into question.

The collective anxiety experienced by women at the Boutique points to the drawbacks of overmedicalization for the wealthy. Yet these women are active participants in this overmedicalization—only two women I interviewed and observed at the Boutique refused testing. The fetal knowledge imperative defining high-risk care for the rich was co-constructed by both patients and doctors throughout the course of treatment. Indeed, this fetal knowledge imperative was connected to a pro-choice ideal by all actors involved. This is where we reach a plot twist: "getting to know baby" is really for the mom, assembled to offer women a choice to terminate a fetus with a detected anomaly as early in their pregnancies as possible.

Physicians treating women at the Boutique and other patients on generous private insurance expressed their own concerns with overmedicalization of pregnancy for the wealthy, whether or not they used the sociologically indicated term. I gained access to the Boutique because of their growing concern over the rapid uptake of a particular fetal genetic screening (non-invasive prenatal testing) and the emotionally complicated experiences of this rapid uptake on their patients. One physician also expressed concern over the growing use of multi-dimensional ultrasound in routine clinical practice, disapproving of the commercialization of the technology. This study deconstructs these concerns methodically through sociological methods, unearthing the practical and emotional intricacies embedded with implementing the latest reproductive technologies in clinical care.

Although wealthy women expressed the desire to undergo heavy genetic processing during their pregnancies, the implementation of emerging genetic technologies such as whole fetal genome sequencing and testing for very rare genetic disorders needs to be carefully evaluated before clinical implementation. This cluster of technologies construct the fetus as "at risk" in various ways—yet this risk is not created equal. Although a blood test that evaluates with 99% accuracy for Down Syndrome may come with more benefits than costs, women at the Boutique also encountered testing for rare genetic diseases that yielded more false positives than true positives. These experiences with false positives were very disturbing for women and their partners. Because these newer technologies come with enormous market potential, incentives drive more and deeper testing than is appropriate. Additionally, the use of obstetric ultrasounds as a social technology as much as a clinical technology must be carefully evaluated, in particular as multidimensional vantage points make their way into routine practice.

II. Intrusive Care for the Poor

I am not the first scholar to note the intrusiveness of publicly funded prenatal care for the poor. In Khiara Bridges' ethnography examining the reproduction of race within pregnancy, she writes, "Medicaid mandates an intrusion into women's private lives and produces pregnancy as an opportunity for state supervision, management, and regulation of poor, otherwise uninsured women" (Bridges, 2011, p. 16). And indeed, the cost of the care women received at the Satellite was a no-holds barred invasiveness into women's lives—whether it be bedroom activities and contraceptive choices, complicated social histories of drug use and incarceration, or indirect "checks" through the pharmacy to gauge whether or not a patient is "compliant" to her medication regimen.

Yet for all its invasiveness, women at the Satellite had access to highly specialized prenatal care, as well as comprehensive care that covered social service needs, consultations for non-pregnancy related medical complications, and many even received transportation assistance to and from the clinic. With a focus on "getting to know mom," Satellite care attended to the many risks low socioeconomic position imposes upon expectant mothers. Clinicians working across field sites brought up the overall "better care" women received at the Satellite compared to the Boutique because of its holistic, comprehensive nature. Although psychiatric complications are the leading cause of maternal mortality (Trost et al., 2022), one physician mentioned that poor women had an easier time accessing mental health services during pregnancy. Domestic violence, although affecting women regardless of socioeconomic status, was only a focus of treatment for pregnant women at the Satellite.

However, this was only if women could jump through the various bureaucratic and logistical hoops to get their foot in the door. Although the Satellite provides high-quality care, many women described receiving negligent prenatal care in the past that caused both maternal and infant harm. Experiences with such negligent care drove women to find the Satellite, and they displayed powerful motivation and drive to receive high-quality care during their pregnancies. Within the broader context, women described a lack of access to high-risk prenatal care in Los Angeles and surrounding counties. Even in the face of serious maternal and fetal complications, it was unclear whether referrals to the Satellite would go through. This was vastly different than the smooth operation wealthy women encountered—no Boutique patients described a lack of available prenatal services during their pregnancies.

Although poor women did receive team-based, comprehensive care, there were key referrals for expectant mothers that did not go through. For example, one woman that received an inconclusive result on a genetic screening did not get approved for genetic counseling, while another's referral to an obesity clinic was denied. These more specialized services, in particular genetic counseling, seemed to be available to wealthy women. And furthermore, the Satellite appeared to have an overabundance in resources related to family planning, while one day an ultrasound machine for an exam room mysteriously went missing.

Poor women's reproduction was approached by providers as something that had to be controlled through contraceptive technologies. Women repeatedly encountered recommendations to go on long-acting birth control methods, even sterilization, when they were clearly not interested in these options. This is where the "official" stances of the

Guidelines for Perinatal Care (American Academy of Pediatrics & American College of Obstetricians and Gynecologists, 2017), federal funding for family planning services, and providers' invasive questioning into women's sex lives rose to the Satellite taking an overall punitive stance on poor women's continued reproduction. The common "surprise" pregnancies at the Satellite were treated as falling outside the bounds of appropriate reproduction.

III. Stitching Together Extremes

What can we learn when comparing the Boutique and Satellite? This study drew on extremes across multiple axes of analysis. We have the "extreme" biological case of the high-risk pregnancy within cases, nestled within a comparative extreme of social class across field sites. In my first chapter, I unveil the divergent focus of care for the wealthy and poor. With a higher baseline level of maternal health, Boutique care is focused on the fetus. The Satellite, contending with the many medical to interpersonal to economic risks of low socioeconomic status, was focused on maternal health. Yet empirical findings reveal an irony—the Boutique care evaluates fetal health to provide "informed choice" for the mom to keep or terminate a potentially anomalous fetus, while Satellite care is ultimately attending to maternal risk to promote the health of the baby.

Wealthy and poor high-risk pregnancies also operate amidst different temporalities. The outliers of the beginnings of the high-risk pregnancy were vastly different. The high-risk label and the attentive treatment that comes along with the label for wealthy women could be diagnosed pre-conception following the use of ART—while a lack of access, availability, and maternal priorities led to the diagnoses of high-risk treatment for poor women as late as the third trimester. This represents just a tiny slice of the differing timescapes examined across social class: at the Boutique women underwent heavy genomic processing during pregnancy before Satellite women even received high-risk care.

With theoretical access to one of the largest state-supported prenatal screening and diagnosis programs in the world, one might expect better access to such care for poor women than empirically indicated. Yet the reasons behind this lack of genetic processing are nuanced. Some women did not receive genetic testing because they could not access care in time. Yet for many, the lack of genetic testing poor women underwent aligned with their personal values and morals around their own reproduction. Few women at the Satellite desired fetal genetic testing, and some poor women that were interviewed, such as Maya, felt coerced into fetal genetic testing. This related to broader themes of difference in how wealthy and poor women relate to their own reproduction.

Wealthy women carefully timed pregnancy through contraceptive technologies during a time in their lives when the ingredients of financial stability, a committed partnership, and emotional readiness coalesced to create the “perfect time” to have children. Some poor women planned their pregnancies, yet many approached pregnancy as something that happened unintentionally and was a joyful surprise. Planning pregnancy is a value embedded within the reproductive health care system, with structures in place to support careful planning such as federally funded family planning services women at the Satellite interfaced with.

A still flourishing research literature examines the many risks associated with “unintended” or unplanned pregnancy. Yet it is unclear within this literature how the independent variable (unintended pregnancy) drives the dependent variables (various maternal and infant risks). Are the unplanned unintended pregnancies “riskier” because of the differing nutrition, less walkable neighborhoods, and other stresses of low socioeconomic status? Or are these increased risks related to the behavior of planning in and of itself? My findings indicate a need for more thorough investigation into the mechanisms underlying unintended pregnancy and low socioeconomic status.

The temporal rhythms of prenatal care were also associated with a compliance continuum running through the behaviors of wealthy and poor women. Prenatal care requires the use of various time regulation tools, such as planning, but also scheduling and self-monitoring within strict temporal orders. I was initially shocked to hear the term "non-compliant" as a patient descriptive at the Satellite. Delving deeper into the use of this non-compliance vernacular, it became clear that non-compliance is often intertwined with poor women's non-adherence to the rather strict time regulation expected of pregnant women. These expectations were illuminated when examining wealthy women and poor women's behavior side-by-side, as wealthy women are expected to and do comply with such a stringent temporal order—they are the ultimate "compliant" patients.

IV. Final Thoughts

The category of the high-risk pregnancy across the wealthy and poor is growing. The population born through ART is now at 2.1% (retrieved from https://www.cdc.gov/art/state-specific-surveillance/index.html#:~:text=Proportion%20of%20ART%20infants%20among%20all%20infants%20born%2C%202019,born%20in%20the%20United%20States), the median age when women have their first child is increasing (Trost et al., 2022) and there are rising rates of metabolic syndrome (defined by cross-cutting rates of obesity, elevated blood sugar, high blood pressure, and unhealthy cholesterol levels) in younger populations (Hirode & Wong, 2020)—all of which contribute to a growing population of women needing high-risk prenatal care during pregnancy. Careful attention must be paid to ensuring equitable access to specialized resources across the socioeconomic divide.

This ethnography analyzes pregnancy as a site of class reproduction across two extremes: the extremes of socioeconomic class and the biological extreme of the high-risk pregnancy. Yet both these extremes are encroaching upon representing the average. The incidence of high-risk pregnancies is steadily increasing (National Academy of Sciences, 2020), and inequality within the United States is growing (Horowitz et al., 2020). In the not-so-distant future, the high-risk pregnancy may become the norm. And with an emptying middle class (Pew Research Center, 2016), the "extreme" ends of the socioeconomic spectrum are becoming more populous than the average. This study points to a growing need to understand the different priorities and needs of pregnant women in a world of intensifying reproductive stratification.

References

American Academy of Pediatrics, & American College of Obstetricians and Gynecologists (Eds.). (2017). *Guidelines for perinatal care* (Eighth edition). American Academy of Pediatrics ; The American College of Obstetricians and Gynecologists.

Anna, V., van der Ploeg, H. P., Cheung, N. W., Huxley, R. R., & Bauman, A. E. (2008). Sociodemographic Correlates of the Increasing Trend in Prevalence of Gestational Diabetes Mellitus in a Large Population of Women Between 1995 and 2005. *Diabetes Care*, *31*(12), 2288–2293. https://doi.org/10.2337/dc08-1038

ATLAS.ti Scientific Software Development GmbH [ATLAS.ti 22 Mac]. (2022). Retrieved from https://atlasti.com

America's Shrinking Middle Class: A Close Look at Changes Within Metropolitan Areas. (2016, May 11). *Pew Research Center's Social & Demographic Trends Project*. https://www.pewresearch.org/social-trends/2016/05/11/americas-shrinking-middle-class-a-close-look-at-changes-within-metropolitan-areas/

Beck, U. (1992). *Risk Society: Towards a New Modernity*. SAGE.

Beynon-Jones, S. M. (2015). Re-visioning Ultrasound through Women's Accounts of Pre-abortion Care in England. *Gender & Society*, *29*(5), 694–715. https://doi.org/10.1177/0891243215590101

Bridges, K. (2011). *Reproducing Race: An Ethnography of Pregnancy as a Site of Racialization*.

Brubaker, R., & Cooper, F. (2000). Beyond "identity." *Theory and Society*, *29*(1), 1–47. https://doi.org/10.1023/A:1007068714468

Chand, S., Salman, A., Abbassi, R. M., Siyal, A. R., Ahmed, F., Leghari, A. L., Kabani, A. S., & Ali, S. (n.d.). Factors Leading To Meconium Aspiration Syndrome in Term- and Post-term Neonates. *Cureus*, *11*(9), e5574. https://doi.org/10.7759/cureus.5574

Cohen, P. (2014). Parental Age and Cognitive Disability among Children in the United States. *Sociological Science*, *1*, 102–110. https://doi.org/10.15195/v1.a8

Daru, J., Zamora, J., Fernández-Félix, B. M., Vogel, J., Oladapo, O. T., Morisaki, N., Tunçalp, Ö., Torloni, M. R., Mittal, S., Jayaratne, K., Lumbiganon, P., Togoobaatar, G., Thangaratinam, S., & Khan, K. S. (2018). Risk of maternal mortality in women with severe anaemia during pregnancy and post partum: A multilevel analysis. *The Lancet Global Health*, *6*(5), e548–e554. https://doi.org/10.1016/S2214-109X(18)30078-0

Declercq, E., Wolterink, A., Rowe, R., Jonge, A. de, Vries, R. D., Nieuwenhuijze, M., Verhoeven, C., & Shah, N. (2023). The natural pattern of birth timing and gestational age in the U.S. compared to England, and the Netherlands. *PLOS ONE*, *18*(1), e0278856. https://doi.org/10.1371/journal.pone.0278856

Dillon, M. (2008). Underwriting Security. *Security Dialogue*, *39*(2–3), 309–332. https://doi.org/10.1177/0967010608088780

Draper, J. (2002). 'It was a real good show': The ultrasound scan, fathers and the power of visual knowledge. *Sociology of Health & Illness*, *24*(6), 771–795. https://doi.org/10.1111/1467-9566.00318

Emerson, R. M., Fretz, R. I., & Shaw, L. L. (2011). *Writing Ethnographic Fieldnotes, Second Edition*. University of Chicago Press.

English, P. B., Kharrazi, M., Davies, S., Scalf, R., Waller, L., & Neutra, R. (2003). Changes in the spatial pattern of low birth weight in a southern California county: The role of individual and neighborhood level factors. *Social Science & Medicine*, *56*(10), 2073–2088. https://doi.org/10.1016/S0277-9536(02)00202-2

Forde, A. T., Crookes, D. M., Suglia, S. F., & Demmer, R. T. (2019). The weathering hypothesis as an explanation for racial disparities in health: A systematic review.

Annals of Epidemiology, *33*, 1-18.e3. https://doi.org/10.1016/j.annepidem.2019.02.011

Gestational Diabetes. (2022, March 2). Centers for Disease Control and Prevention. https://www.cdc.gov/diabetes/basics/gestational.html

Giddens, A. (2013). *Modernity and Self-Identity: Self and Society in the Late Modern Age*. John Wiley & Sons.

Goldenberg, R. L., & McClure, E. M. (2015). Maternal, fetal and neonatal mortality: Lessons learned from historical changes in high income countries and their potential application to low-income countries. *Maternal Health, Neonatology and Perinatology*, *1*(1), 3. https://doi.org/10.1186/s40748-014-0004-z

Graham, L. (2007). ACOG Releases Guidelines on Screening for Fetal Chromosomal Abnormalities. *American Family Physician*, *76*(5), 712.

Hirode, G., & Wong, R. J. (2020). Trends in the Prevalence of Metabolic Syndrome in the United States, 2011-2016. *JAMA*, *323*(24), 2526–2528. https://doi.org/10.1001/jama.2020.4501

In vitro fertilization (IVF): What are the risks? (n.d.). Retrieved May 23, 2023, from https://www.reproductivefacts.org/news-and-publications/patient-fact-sheets-and-booklets/documents/fact-sheets-and-info-booklets/in-vitro-fertilization-ivf-what-are-the-risks/

Innerarity, D. (2013). Power and knowledge The politics of the knowledge society. *European Journal of Social Theory*, *16*(1), 3–16. https://doi.org/10.1177/1368431012468801

Jabaz, D., & Abed, M. (2023). Sonography 2nd Trimester Assessment, Protocols, And Interpretation. In *StatPearls*. StatPearls Publishing. http://www.ncbi.nlm.nih.gov/books/NBK570574/

Kaufman, S. R. (2015). *Ordinary Medicine: Extraordinary Treatments, Longer Lives, and Where to Draw the Line*. Duke University Press.

Lupton, D. (1999). *Risk and Sociocultural Theory: New Directions and Perspectives*. Cambridge University Press.

Lutfey, K., & Freese, J. (2005). Toward Some Fundamentals of Fundamental Causality: Socioeconomic Status and Health in the Routine Clinic Visit for Diabetes. *American Journal of Sociology*, *110*(5), 1326–1372. https://doi.org/10.1086/428914

Markens, S., Browner, C. H., & Mabel Preloran, H. (2010). Interrogating the dynamics between power, knowledge and pregnant bodies in amniocentesis decision making. *Sociology of Health & Illness*, *32*(1), 37–56. https://doi.org/10.1111/j.1467-9566.2009.01197.x

Markens, S., Browner, C. H., & Press, N. (1999). `Because of the risks': How US pregnant women account for refusing prenatal screening. *Social Science & Medicine*, *49*(3), 359–369. https://doi.org/10.1016/S0277-9536(99)00097-0

Maternal mortality ratio. (n.d.). Our World in Data. Retrieved May 14, 2023, from https://ourworldindata.org/grapher/maternal-mortality-ratio-sdgs

Media, B. K.-K. (n.d.). *Press*. Retrieved May 7, 2023, from https://www.smfm.org/press

Mitchell, L. M. (2001). *Baby's First Picture: Ultrasound and the Politics of Fetal Subjects*. University of Toronto Press; JSTOR. https://doi.org/10.3138/9781442671140

Mitchell, T. (2020, January 9). 1. Trends in income and wealth inequality. *Pew Research Center's Social & Demographic Trends Project*. https://www.pewresearch.org/social-trends/2020/01/09/trends-in-income-and-wealth-inequality/

Morgan, L. (2009). *Icons of Life: A Cultural History of Human Embryos*.

Nagata, C., Yang, L., Yamamoto-Hanada, K., Mezawa, H., Ayabe, T., Ishizuka, K., Konishi, M., Ohya, Y., Saito, H., Sago, H., Kawamoto, T., Kishi, R., Yaegashi, N., Hashimoto, K., Mori, C., Ito, S., Yamagata, Z., Inadera, H., Kamijima, M., … Japan Environment & Children's Study Group. (2019). Complications and adverse outcomes in pregnancy and childbirth among women who conceived by assisted reproductive technologies: A nationwide birth cohort study of Japan environment and children's study. *BMC Pregnancy and Childbirth*, *19*(1), 77. https://doi.org/10.1186/s12884-019-2213-y

National Academies of Sciences, E., Division, H. and M., Education, D. of B. and S. S. and, Board on Children, Y., Settings, C. on A. H. O. by B., Backes, E. P., & Scrimshaw, S. C. (2020). Epidemiology of Clinical Risks in Pregnancy and Childbirth. In *Birth Settings in America: Outcomes, Quality, Access, and Choice*. National Academies Press (US). https://www.ncbi.nlm.nih.gov/books/NBK555485/

Ogden, C. L., Lamb, M. M., Carroll, M. D., & Flegal, K. M. (2010). Obesity and socioeconomic status in adults: United States, 2005-2008. *NCHS Data Brief*, *50*, 1–8.

Pearl, M., Ahern, J., Hubbard, A., Laraia, B., Shrimali, B. P., Poon, V., & Kharrazi, M. (2018). Life-course neighbourhood opportunity and racial-ethnic disparities in risk of preterm birth. *Paediatric and Perinatal Epidemiology*, *32*(5), 412–419. https://doi.org/10.1111/ppe.12482

Politi, S., D'Emidio, L., Cignini, P., Giorlandino, M., & Giorlandino, C. (2010). Shoulder dystocia: An Evidence-Based approach. *Journal of Prenatal Medicine*, *4*(3), 35–42.

Possamai-Inesedy, A. (2006). Confining risk: Choice and responsibility in childbirth in a risk society. *Health Sociology Review*, *15*(4), 406–414. https://doi.org/10.5172/hesr.2006.15.4.406

Rapp, R. (1999). *Testing Women, Testing the Fetus: The Social Impact of Amniocentesis in America*. Psychology Press.

Rapp, R. (2001). Gender, Body, Biomedicine: How Some Feminist Concerns Dragged Reproduction to the Center of Social Theory. *Medical Anthropology Quarterly*, *15*(4), 466–477. https://doi.org/10.1525/maq.2001.15.4.466

Reissland, N. (2014). What the Fetal Face can tell Us: A Discussion of the Evidence, Implications and Potential for Further Research. *Donald School Journal of Ultrasound in Obstetrics and Gynecology*, *8*(4), 336–343. https://doi.org/10.5005/jp-journals-10009-1373

Roberts, D. (1995). The Genetic Tie. *University of Chicago Law Review*, *62*(1). https://chicagounbound.uchicago.edu/uclrev/vol62/iss1/3

Roberts, D. E. (2017). *Killing the black body: Race, reproduction, and the meaning of liberty*.

Roberts, J. (2012). 'Wakey wakey baby': Narrating four-dimensional (4D) bonding scans. *Sociology of Health & Illness*, *34*(2), 299–314. https://doi.org/10.1111/j.1467-9566.2011.01345.x

Roberts, J., Griffiths, F. E., Verran, A., & Ayre, C. (2015). Why do women seek ultrasound scans from commercial providers during pregnancy? *Sociology of Health & Illness*, *37*(4), 594–609. https://doi.org/10.1111/1467-9566.12218

Rothman, B. K. (1993). The tentative pregnancy: Then and now. *Fetal Diagnosis and Therapy*, *8*(Suppl. 1), 60–63. https://doi.org/10.1159/000263873

State-Specific Assisted Reproductive Technology Surveillance | CDC. (2021, December 23). https://www.cdc.gov/art/state-specific-surveillance/index.html

Sweeney, M. M., & Raley, R. K. (2014). Race, Ethnicity, and the Changing Context of Childbearing in the United States. *Annual Review of Sociology*, *40*, 539–558. https://doi.org/10.1146/annurev-soc-071913-043342

Tavory, I., & Timmermans, S. (2014). *Abductive Analysis: Theorizing Qualitative Research*. University of Chicago Press.

Taylor, J. S. (2008). *The Public Life of the Fetal Sonogram: Technology, Consumption, and the Politics of Reproduction* (None edition). Rutgers University Press.

Thomas, G. M. (2017). Picture perfect: '4D' ultrasound and the commoditisation of the private prenatal clinic. *Journal of Consumer Culture*, *17*(2), 359–377. https://doi.org/10.1177/1469540515602300

Thomas, G. M., Roberts, J., & Griffiths, F. E. (2017). Ultrasound as a technology of reassurance? How pregnant women and health care professionals articulate ultrasound reassurance and its limitations. *Sociology of Health & Illness*, *39*(6), 893–907. https://doi.org/10.1111/1467-9566.12554

Tonni, G., Castigliego, A. P., Grisolia, G., Lituania, M., Meagher, S., Da Silva Costa, F., & Araujo, E. (2016). Three-dimensional ultrasonography by means of HDlive rendering in the first trimester of pregnancy: A pictorial review. *Journal of the Turkish German Gynecological Association*, *17*(2), 110–119. https://doi.org/10.5152/jtgga.2016.15201

Trevett, T., & Johnson, A. (2005). Monochorionic Twin Pregnancies. *Clinics in Perinatology*, *32*(2), 475–494. https://doi.org/10.1016/j.clp.2005.02.007

Trost, S., Beauregard, J., Chandra, G., Njie, F., Berry, J., Harvey, A., & Goodman, D. A. (n.d.). *Pregnancy-Related Deaths: Data from Maternal Mortality Review Committees in 36 US States, 2017-2019*.

Vanstone, M., King, C., de Vrijer, B., & Nisker, J. (2014). Non-invasive prenatal testing: Ethics and policy considerations. *Journal of Obstetrics and Gynaecology Canada: JOGC = Journal d'obstetrique et Gynecologie Du Canada: JOGC*, *36*(6), 515–526. https://doi.org/10.1016/S1701-2163(15)30568-5

Vintzileos, A. M., Ananth, C. V., Smulian, J. C., Scorza, W. E., & Knuppel, R. A. (2002). The impact of prenatal care on neonatal deaths in the presence and absence of antenatal high-risk conditions. *American Journal of Obstetrics and Gynecology*, *186*(5), 1011–1016. https://doi.org/10.1067/mob.2002.122446