

Arizona Supreme Court

PLANNED PARENTHOOD ARIZONA, INC., ET AL.,
Plaintiffs/Appellants,

v.

KRISTIN MAYES, ET AL.,
Defendants/Appellees

and

ERIC HAZELRIGG, M.D.,
Intervenor/Appellee.

COURT OF APPEALS, DIVISION TWO, NO. 2 CA-CV 2022-0116
PIMA COUNTY SUPERIOR COURT, NO. C127867

**BRIEF OF AMERICAN COLLEGE OF PEDIATRICIANS AS
AMICUS CURIAE IN SUPPORT OF
INTERVENOR/APPELLEE'S PETITION FOR REVIEW**

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CONSENT OF ALL PARTIES**

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INTEREST OF *AMICUS CURIAE*

The American College of Pediatricians is a national organization of health care professionals dedicated to the health and well-being of children. Of importance to the College is the sanctity of human life from conception to natural death. All parties consented to this brief. No one other than *amicus* and its counsel provided financial resources for this brief.

SUMMARY OF ARGUMENT

The faulty premise of the decision below is that by prohibiting abortions after 15 weeks, the legislature created a right for Planned Parenthood to carry out elective abortions before 15 weeks. It did not. *See* 2022 Ariz. Sess. Laws, ch. 105, § 2(1) (“The Legislature does not intend this act to make lawful an abortion that is currently unlawful.”). Indeed, as the decision below acknowledged, “[d]ating back to its territorial days, Arizona has had a near-total statutory ban on abortion.” App. 78. Thus, the People of Arizona have repeatedly spoken through their representatives to protect unborn life.

To be sure, the United States Supreme Court tried to impose a judicial vision of abortion-on-demand for nearly 50 years, to disastrous results. It struggled to identify the constitutional basis of such a right, veering from privacy in *Roe v. Wade*, 410 U.S. 113, 154 (1973), to autonomy and mysteries of life in *Planned Parenthood of Southeastern Pennsylvania v. Casey*, 505 U.S. 833, 851 (1992). It could not decide the parameters of such a right, careening from trimesters in *Roe* to viability in *Casey*. It could not identify why viability mattered but in purely “circular” fashion. *Dobbs v. Jackson Women’s Health Org.*, 142 S. Ct. 2228, 2311 (2022) (Roberts, C.J., concurring in judgment). It could not provide a workable standard to adjudicate any right to

abortion. *Id.* at 2272 (majority op.). And its invented right precipitated the deaths of more than 63 million unborn children in America.

Responding to this lawless usurpation of the People’s right to protect unborn life, the Arizona legislature tried to work within this framework and passed a law to protect life after 15 weeks. But that law expressly said that it did not create any right to abortions before that point. Thus, the legislative intent—reflecting the views of the People—remained clear: to protect unborn life. As the Petition explains, standard principles of statutory interpretation lead to the conclusion that two restrictions on abortion do not create a right for Planned Parenthood to abort unborn children.

This conclusion—and the People’s choice to protect unborn life as much as they can—is consistent with the latest medical evidence about early fetal development. “[B]y common understanding and scientific terminology, a fetus is a living organism while within the womb, whether or not it is viable outside the womb.” *Gonzales v. Carhart*, 550 U.S. 124, 147 (2007). At five weeks’ gestation (just three weeks after conception), the unborn child’s heart starts beating. By six weeks, brain waves are detectable. By seven weeks, the child can move and starts to develop sensory receptors. By ten weeks, multiple organs begin to function, and the child has the neural circuitry for spinal reflex, an early response to pain. By twelve weeks, the child can open and close fingers and sense stimulation from the outside world. And

medical interventions after fifteen weeks (other than abortion) use analgesia to prevent suffering. At this point of pregnancy, abortionists must rip the child “piece by piece” from the womb. *Gonzales*, 550 U.S. at 136.

This Court is not called upon to consider the implications of these facts. The People have done so through their elected representatives, and they decided that unborn life is worth protecting. This Court should grant the petition for review.

ARGUMENT

The People’s decision to protect unborn life reflects scientific fact. Medical advancements have produced scientific evidence that makes clear today what the U.S. Supreme Court in *Roe* could not understand: the human fetus is a living being from the moment of conception and can move, smile, and feel pain in the womb.

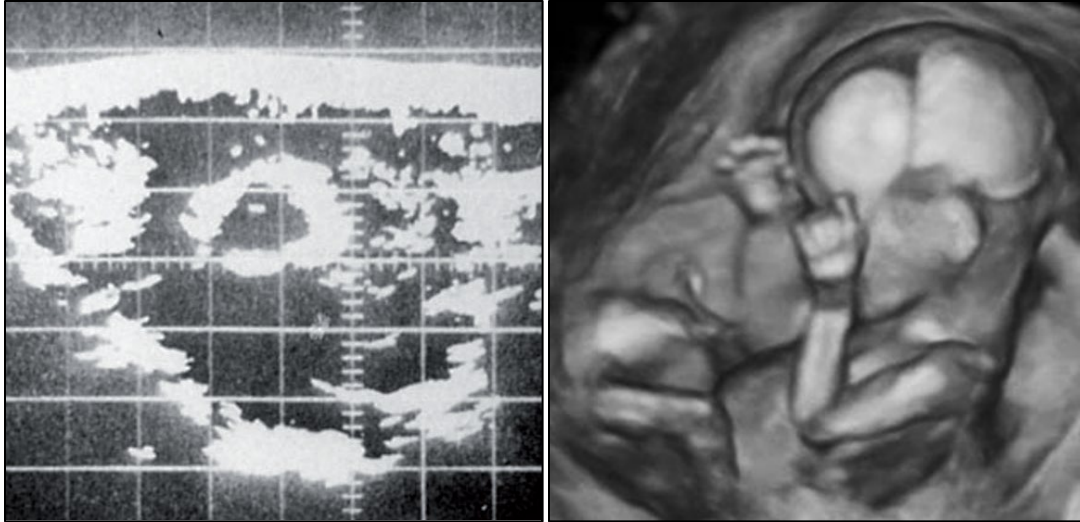
When the Court decided *Roe* in 1973, scientific knowledge about fetal development was limited, with fetology only recognized as a new field of science that same year.¹ Indeed, the Court had been told that “in early pregnancy” “embryonic development has scarcely begun.” Brief for Appellant 20, *Roe*, 1971 WL 128054. Thus, “[a]s to the question ‘when life begins,’ the *Roe* majority maintained that ‘at that point in the development of man’s knowledge,’ it was ‘not in a position to

¹ Sara Dubow, *Ourselves Unborn: A History of the Fetus in Modern America* 113 (2011).

speculate.’” *Memphis Ctr. for Reprod. Health v. Slatery*, 14 F.4th 409, 450 (6th Cir. 2021) (Thapar, J., concurring in judgment in part and dissenting in part) (quoting *Roe*, 410 U.S. at 159). The Court purported to rely on what it considered to be “the well-known facts of fetal development” to conclude that a pre-viability “fetus, at most, represents only the potentiality of life.” *Roe*, 410 U.S. at 156, 162. Only in the late 1970s—years after *Roe*—did the use of ultrasound machines expand.² Unlike the prototypes in limited use in 1973, routine ultrasounds can now provide high-definition four-dimensional images in real time that reveal the fetus to be much more developed than the Court in *Roe* could have known. Reflecting these advances in medical knowledge, ultrasound imagery available at the time of *Roe* looked much different from the imagery available today, as shown by these fifteen-week ultrasounds from 1973 and today³:

² Malcolm Nicholson & John E.E. Fleming, *Imaging and Imagining the Fetus: The Development of Obstetric Ultrasound* 232 (2013).

³ Stuart Campbell, *A Short History of Sonography in Obstetrics and Gynaecology*, 5 FVV-ObGyn 217 (2013); Kristen J. Gough, *Second Trimester Ultrasound Pictures* (Dec. 5, 2019), <https://perma.cc/J2NV-GT6M>.



Now we know that “[f]rom fertilization, an embryo (and later, fetus) is alive and possesses its unique DNA.”⁴ The fusion of the oocyte and the sperm create the zygote “in less than a single second.”⁵ In a “biological sense,” “the embryo or fetus is whole, separate, unique and living” from conception. *Planned Parenthood Minn., N.D., S.D. v. Rounds*, 530 F.3d 724, 736 (8th Cir. 2008) (en banc).

During the fifth week, “[t]he cardiovascular system is the first major system to function in the embryo,” with the heart and vascular system appearing in the

⁴ *Slatery*, 14 F.4th at 450 (Thapar, J.) (citing Enrica Bianchi et al., *Juno Is the Egg Izumo Receptor and Is Essential for Mammalian Fertilization*, 508 *Nature* 483, 483 (2014)).

⁵ Am. Coll. of Pediatricians, *When Human Life Begins* (Mar. 2017), <https://perma.cc/Z9W5-UN9T>; see also Ulyana Vjugina & Janice P. Evans, *New Insights into the Molecular Basis of Mammalian Sperm-Egg Membrane Interactions*, 13 *Frontiers Bioscience* 462, 462–76 (2008); Maureen L. Condic, *When Does Human Life Begin? A Scientific Perspective* 5 (2008).

middle of the week.⁶ By the end of the fifth week, “blood is circulating and the heart begins to beat on the 21st or 22nd day” after conception.⁷ By six weeks, “[t]he embryonic heartbeat can be detected” via transvaginal ultrasound.⁸ After detection of a fetal heartbeat—and absent an abortion—the overwhelming majority of unborn children will now survive to birth.⁹ Also during the sixth week, the child’s nervous system is developing, with the brain already “patterned” at this early stage.¹⁰ The earliest neurons are generated in the region of the brain responsible for thinking, memory, and other higher functions.¹¹

At seven weeks, cutaneous sensory receptors, which permit prenatal pain perception, begin to develop.¹² The unborn child also starts to move.¹³ During the seventh week, “the growth of the head exceeds that of other regions” largely because

⁶ Keith L. Moore et al., *The Developing Human E-Book: Clinically Oriented Embryology* 8945 (Kindle ed. 2020).

⁷ *Id.* at 2662.

⁸ *Id.* at 2755; accord WebArchive, Planned Parenthood, *What Happens in the Second Month of Pregnancy?* (July 25, 2022), <https://tinyurl.com/2jvsvh34>.

⁹ Joe Leigh Simpson, *Low Fetal Loss Rates After Ultrasound Proved-Viability in First Trimester*, 258 J. Am. Med. Ass’n 2555, 2555–57 (1987).

¹⁰ Thomas W. Sadler, *Langman’s Medical Embryology* 72 (14th ed. 2019); see generally *id.* at 59–95.

¹¹ See, e.g., Irina Bystron et al., *Tangential Networks of Precocious Neurons and Early Axonal Outgrowth in the Embryonic Human Forebrain*, 25 J. Neuroscience 2781, 2788 (2005)

¹² Kanwaljeet S. Anand & Paul R. Hickey, Special Article, *Pain and Its Effects in the Human Neonate and Fetus*, 317 New Eng. J. Med. 1321, 1322 (1987).

¹³ Alessandra Pionetelli, *Development of Normal Fetal Movements: The First 25 Weeks of Gestation* 98, 110 (2010).

of “the rapid development of the brain” and facial features.¹⁴ At eight weeks, essential organs and systems have started to form, including the child’s kidneys, liver, and lungs.¹⁵ At nine weeks, the child’s ears, eyes, teeth, and external genitalia are forming.¹⁶ At ten weeks, vital organs begin to function, and the child’s hair and nails begin to form.¹⁷

Meanwhile, the peripheral pain receptors begin forming around seven weeks¹⁸ and “the first evidence for an intact nociceptive system in the fetus emerges at about 8 weeks . . . [when] touching the perioral region will result in movement away.”¹⁹ Nociception—or the nervous system’s processing of noxious stimuli—“causes physiologic stress, which in turn causes increases in catecholamines, cortisol and other stress hormones.”²⁰ Starting around ten weeks, the earliest connections between neurons constituting the subcortical-frontal pathways—the circuitry of the

¹⁴ Keith L. Moore et al., *The Developing Human: Clinically Oriented Embryology* 65–84.e1 (11th ed. 2020).

¹⁵ See Sadler, *supra* note 10, at 72–95.

¹⁶ See *id.*

¹⁷ See *id.* at 106–127; Moore et al., *supra* note 14, at 65–84.e1; Johns Hopkins Med., *The First Trimester*, <https://perma.cc/8N6H-M6CN>.

¹⁸ Linda A. Hatfield, *Neonatal pain: What’s age got to do with it?*, *Surgical Neurology International* S479, S481 (2014).

¹⁹ Stuart W. G. Derbyshire, *Foetal Pain?*, *Best Practice & Research Clinical Obstetrics and Gynaecology* 647 (2010).

²⁰ Curtis L. Lowery et al., *Neurodevelopmental Changes of Fetal Pain*, 31 *Seminars Perinatology* 275, 275 (2007).

brain that is involved in a wide range of psychological and emotional experiences, including pain perception—are established.²¹

At the time of *Roe*, “the medical consensus was that babies do not feel pain.”²² Only during the late 1980s and early 1990s did any of the initial scientific evidence for prenatal pain begin to emerge.²³ Today, the “evidence for the subconscious incorporation of pain into neurological development and plasticity is incontrovertible.”²⁴ Updated reviews of prenatal pain consistently acknowledge: by ten to twelve weeks, a fetus develops neural circuitry capable of detecting and responding to pain.²⁵ Even more sophisticated reactions occur as the unborn child develops further.²⁶ And new developments—including videos of reactions—have provided still

²¹ Lana Vasung et al., *Development of Axonal Pathways in the Human Fetal Frontal-Limbic Brain: Histochemical Characterization and Diffusion Tensor Imaging*, 217 *J. Anatomy* 400, 400–03 (2010).

²² Am. Coll. of Pediatricians, *Fetal Pain: What is the Scientific Evidence?* (Jan. 2021), <https://perma.cc/JM3T-XQV8>.

²³ *Id.*

²⁴ Lowery et al., *supra* note 20, at 275.

²⁵ See, e.g., Carlo V. Bellieni & Giuseppe Buonocore, *Is Fetal Pain a Real Evidence?*, 25 *J. Maternal-Fetal & Neonatal Med.* 1203, 1203–08 (2012); Richard Rokyta, *Fetal Pain*, 29 *Neuroendocrinology Letters* 807, 807–14 (2008).

²⁶ See Royal Coll. of Obstetricians & Gynaecologists, *Fetal Awareness: Review of Research and Recommendations for Practice* 5, 7 (Mar. 2010), <https://perma.cc/4V84-TEMC>; Susan J. Lee et al., *Fetal Pain: A Systematic Multidisciplinary Review of the Evidence*, 294 *J. Am. Med. Ass’n* 947, 948–49 (2005).

more evidence strengthening the conclusion that fetuses are capable of experiencing pain in the womb.²⁷

As early as ten or eleven weeks, the fetus shows awareness of his or her environment.²⁸ Studies of twins, for example, show that by ten to eleven weeks, twins engage in “inter-twin contact.”²⁹ The fetus also begins to perform “breathing movements” that “increase progressively” as he or she develops in the womb.³⁰

At eleven weeks, the unborn child’s diaphragm is developing.³¹ The child has hands and feet, ears, open nasal passages on the tip of the nose, and a tongue.³² By twelve weeks, the parts of the central nervous system leading from peripheral nerves to the brain are sufficiently connected to permit the peripheral pain receptors to detect painful stimuli.³³ Thus, the unborn “baby develops sensitivity to external stimuli and to pain much earlier than was believed” when *Roe* and *Casey* were decided. *MKB*

²⁷ See Lisandra Stein Bernardes et al., *Acute Pain Facial Expressions in 23-Week Fetus, Ultrasound Obstetrics & Gynecology* (June 2021), <https://perma.cc/V8BU-PZK4>. A video accompanying this article showing facial reactions can be accessed at <https://obgyn.onlinelibrary.wiley.com/action/downloadSupplement?doi=10.1002%2Fuog.23709&file=uog23709-sup-0001-VideoS1.mp4>.

²⁸ Umberto Castiello et al., *Wired to Be Social: The Ontogeny of Human Interaction*, 5 PLOS One, Oct. 2017, e13199, at 1, 9.

²⁹ *Id.*

³⁰ Pionetelli, *supra* note 13, at 40.

³¹ *Id.* at 31.

³² Moore et al., *supra* note 14, 1–9.e1; Prachi Jain & Manu Rathee, *Embryology, Tongue* (last updated Aug. 11, 2020), <https://perma.cc/FCP4-7788>.

³³ Slobodan Sekulic et al., *Appearance of Fetal Pain Could Be Associated with Maturation of the Mesodiencephalic Structures*, 9 J. Pain Rsch. 1031, 1034–35 (2016).

Mgmt. Corp. v. Stenehjem, 795 F.3d 768, 774 (8th Cir. 2015) (cleaned up).



*Unborn Child at Thirteen Weeks*³⁴

At thirteen weeks, the bone structure is forming in the child’s arms and legs,³⁵ and the intestines are in place within his or her abdomen.³⁶ By fifteen weeks, “the fetus is extremely sensitive to painful stimuli,” and physicians (other than abortionists) take this fact “into account when performing invasive medical procedures on the fetus.”³⁷ Even more neural circuitry for pain detection and transmission develops between sixteen and twenty weeks, including spinothalamic fibers, which are

³⁴ Moore et al., *supra* note 14, at 85–98.e1.

³⁵ Mayo Clinic, *Pregnancy Week by Week: Fetal Development: The 2nd Trimester* (June 30, 2020), <https://perma.cc/M7PA-6T9A>.

³⁶ Mayo Clinic, *Pregnancy Week by Week: Fetal Development: The 1st Trimester* (June 30, 2020), <https://perma.cc/D7JW-H6YW>.

³⁷ Sekulic et al., *supra* note 33, at 1036.

responsible for the transmission of pain from the periphery to the thalamus.³⁸ By eighteen weeks, painful stimuli will cause the baby *in utero* to exhibit stress-induced hormonal responses.³⁹ Studies show that “the fetus reacts to intrahepatic vein needling with vigorous body and breathing movements.”⁴⁰ The fetus also reacts to such stimuli with “hormonal stress responses” “independent of those of the mother.”⁴¹

These recent discoveries have led scientists to conclude that “the human fetus can feel pain when it undergoes surgical interventions and direct analgesia must be provided to it.”⁴² For this reason, updated consensus among anesthesiologists is to “administer adequate fetal anesthesia in all invasive maternal-fetal procedures to inhibit the humoral stress response, decrease fetal movement, and blunt any perception of pain.”⁴³ As one group of scholars explains, “the fetus is extremely sensitive

³⁸ Ritu Gupta et al., *Fetal Surgery and Anesthetic Implications*, 8 Continuing Educ. Anesthesia, Critical Care & Pain 71, 74 (2008).

³⁹ Stuart W. G. Derbyshire, *Can Fetuses Feel Pain?*, 332 Brit. Med. J. 909, 910 (2006).

⁴⁰ Xenophon Giannakouloupoulos et al., *Fetal Plasma Cortisol and b-endorphin Response to Intrauterine Needling*, 344 Lancet 77, 77–78 (1994).

⁴¹ Rachel Gitau et al., *Fetal Hypothalamic-Pituitary-Adrenal Stress Responses to Invasive Procedures are Independent of Maternal Responses*, 86 J. Clinical Endocrinology & Metabolism 104, 104 (2001).

⁴² Carlo V. Bellieni, *Analgesia for Fetal Pain During Prenatal Surgery: 10 Years of Progress*, 89 Pediatrics Rsch. 1612, 1612 (2021).

⁴³ Debnath Chatterjee, *Anesthesia for Maternal-Fetal Interventions*, 132 Anesthesia & Analgesia 1164, 1167 (2021); Sekulic et al., *supra* note 33, at 1036.

to painful stimuli,” and “[i]t is necessary to apply adequate analgesia to prevent the suffering of the fetus.”⁴⁴ Other scholars agree with this assessment.⁴⁵

Based on outdated evidence, some have argued that fetal perception of pain requires connections to the cerebral cortex and the need for conscious awareness.⁴⁶ Neither is true. From an anatomic standpoint, substantial evidence demonstrates that *subcortical* structures are sufficient for pain perception.⁴⁷ Proving the point are adults with cortical injuries who can still feel pain⁴⁸ and infants whose brains are abnormal or did not form (*e.g.*, anencephaly or hydrocephalus), yet they maintain the ability react to painful stimulation.⁴⁹

Conscious awareness as shown by the ability to verbally describe one’s pain is no longer part of the updated and often quoted International Association for the Study of Pain definition of pain.⁵⁰ Adults in a coma cannot describe or complain about pain, but no one denies that painful procedures affect them. A fetus also cannot

⁴⁴ Sekulic et al., *supra* note 33, at 1036.

⁴⁵ See, *e.g.*, Carlo V. Bellieni et al., *Use of Fetal Analgesia During Prenatal Surgery*, 26 J. Maternal-Fetal Neonatal Med. 90, 94 (2013).

⁴⁶ Lee, *supra* note 26.

⁴⁷ See Stuart W. G. Derbyshire et al., *Reconsidering Fetal Pain*, 46 J. Med. Ethics 3 (2020); Lowery et al., *supra* note 20; Roland Brusseau, *Developmental Perspectives: Is the Fetus Conscious?*, 46 Int’l Anesthesiology Clinics 11 (2008); Sampsa Vanhatalo, *Fetal Pain?*, 22 Brain & Development 145 (2000).

⁴⁸ Brusseau, *supra* note 47.

⁴⁹ Sekulic et al., *supra* note 33.

⁵⁰ Srinivasa N. Raja et al., *The Revised International Association for the Study of Pain Definition of Pain*, 161 Pain 1976 (2020).

describe pain, but in response to painful stimulation they have measurable increases in their stress hormones⁵¹ and documented facial changes.⁵² Both before and after birth, babies much younger than 24 weeks are capable of an unreflective, yet very real response to pain.⁵³

Thus, in every other medical practice at this stage of fetal development, physicians recognize the need to protect the unborn child in the womb and prioritize the child's health, even when making treatment plans for the child's mother.⁵⁴ By contrast, abortionists use no analgesia as they “dismember the fetus” “limb from limb” until the fetus “bleeds to death.” *Stenberg v. Carhart*, 530 U.S. 914, 958–59 (2000) (Kennedy, J., dissenting).

At fifteen weeks, unborn children kick their legs and move their arms.⁵⁵ And by sixteen weeks, the child's eyes are moving side-to-side, and they can perceive light.⁵⁶ Between seventeen and eighteen weeks, the unborn child's fingers and toes

⁵¹ Gitau et al., *supra* note 41.

⁵² Bernardes et al., *supra* note 27.

⁵³ Derbyshire et al., *supra* note 47.

⁵⁴ See, e.g., Ryan M. Antiel et al., *Weighing the Social and Ethical Considerations of Maternal-Fetal Surgery*, 140 *Pediatrics*, Dec. 2017, e20170608, at 1, 3–4.

⁵⁵ Johns Hopkins All Children's Hosp., *A Week-by-Week Pregnancy Calendar: Week 15*, <https://perma.cc/62JP-CXL3>.

⁵⁶ Mayo Clinic, *supra* note 35.

each develop their own unique prints.⁵⁷ By eighteen weeks, the child can hear his or her mother's voice, and the child can yawn.⁵⁸

At twenty weeks, the sex-specific reproductive organs have developed enough to permit identification of the child's sex by ultrasound, and girls have eggs in their ovaries.⁵⁹ Around this time, "facial expressions begin to appear consistently, including 'negative emotions.'"⁶⁰

At twenty-one weeks, the physical and neurological development of the unborn child is sufficiently mature that, in some cases, the child can survive childbirth.⁶¹ According to a 2015 publication, between 23% and 60% of infants born at twenty-two weeks who receive active hospital treatment survive,⁶² many without

⁵⁷ Johns Hopkins Med., *The Second Trimester*, <https://perma.cc/M7WA-6PC5>.

⁵⁸ *Id.*; see also Cleveland Clinic, *Fetal Development: Stages of Growth* (last updated Apr. 16, 2020), <https://perma.cc/YG92-KRH4>.

⁵⁹ See, e.g., Kavita Narang et al., *Developmental Genetics of the Female Reproductive Tract*, in *Human Reproductive and Prenatal Genetics* 129, 132, 135 (Peter C. K. Leung & Jie Qiao eds., 2019).

⁶⁰ Pionetelli, *supra* note 13, at 80.

⁶¹ See Kaashif A. Ahmad et al., *Two-Year Neurodevelopmental Outcome of an Infant Born at 21 Weeks' 4 Days' Gestation*, 140 *Pediatrics*, Dec. 2017, e20170103, at 1–2, <https://perma.cc/D9UR-KHDU>.

⁶² Matthew A. Rysavy et al., *Between-Hospital Variation in Treatment and Outcomes in Extremely Preterm Infants*, 372 *New Eng. J. Med.* 1801, 1804 (2015); Katrin Mehler et al., *Survival Among Infants Born at 22 or 23 Weeks' Gestation Following Active Prenatal and Postnatal Care*, 170 *J. Am. Med. Ass'n Pediatrics* 671, 675 (2016).

immediate or long-term neurologic impairment.⁶³ A 2019 publication showed that survival at some institutions increased to 78% at 22–23 weeks gestation.⁶⁴ Thus, imposing particular values on “viability” “create[s] facts”: “A policy that limits treatment for infants born at 24 weeks’ gestation will lead to [comparatively] low survival rates for those infants.”⁶⁵

As shown, the legislature’s judgment that unborn life deserves legal protection is amply supported by scientific fact. And the long history of abortion restrictions in Arizona, implemented in light of these scientific facts, contradicts Planned Parenthood’s claimed right to elective abortion.

CONCLUSION

This Court should grant the petition for review.

⁶³ See, e.g., Noelle Younge et al., *Survival and Neurodevelopmental Outcomes Among Periviable Infants*, 376 *New Eng. J. Med.* 617, 622, 627 (2017) (describing study showing “an increase in the rate of survival without neurodevelopmental impairment from 2000 through 2011”); Antti Holsti et al., *Two-Thirds of Adolescents who Received Active Perinatal Care After Extremely Preterm Birth Had Mild or No Disabilities*, 105 *Acta Paediatrica* 1288, 1296 (2016) (similar).

⁶⁴ Patricia L. Watkins et al., *Outcomes at 18 to 22 Months of Corrected Age for Infants Born at 22 to 25 Weeks of Gestation in a Center Practicing Active Management*, 217 *J. Pediatrics* 52 (2019).

⁶⁵ John D. Lantos & William Meadow, *Variation in the Treatment of Infants Born at the Borderline of Viability*, 123 *Pediatrics* 1588, 1589 (2009).

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