

Memphis Human Progress and Human Services 2035 Scenarios

*By United Way of the Mid-South and the Institute for Alternative Futures,
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Introduction

What will human progress, human need and human services be in Memphis and Shelby County in 2035? What implications does it have for today's strategies for public and private human service providers and community partners? The Memphis Human Progress and Human Services 2035 Scenarios offer a tool for the Memphis human services community to explore these questions at the level of their own jurisdiction and to better inform future-oriented, long-term strategies and efforts. For this purpose, these scenarios consider a range of forces, challenges, and opportunities shaping local and national human services and offer a plausible set of expectable, challenging, and visionary pathways for how human services may change over the years to 2035, and the roles of current human service providers could be within these plausible pathways.

These preliminary scenarios will be used at a scenario workshop held at United Way of the Mid-South headquarters on January 13, 2017, where participants will consider potential human service goals and strategies for the future, as well as implications for the “robustness” of their current strategies in light of the various scenarios. Participants will also develop recommendations.

These Memphis Human Progress and Human Services 2035 scenarios are an important part of a larger project on the futures of human services—conducted by the Institute for Alternative Futures (IAF) and supported by the Kresge Foundation. In addition to developing scenarios for the human services community in six cities and counties and two states, IAF is also developing a set of national human service scenarios. These national scenarios and these Memphis scenarios will allow human service leaders, practitioners and partners to consider their own work in the context of these alternative futures, to challenge their own assumptions about the future, to identify emerging risks and opportunities, and to formulate more robust strategies with a greater potential to advance their mission over the decades to come.

Why scenarios?

The future is uncertain. However, scenarios – different stories describing how the future may unfold – can be used to bound that uncertainty into a limited number of paths. These paths help us think about different probabilities in a larger space of possibilities. Scenarios also force us to consider the systems surrounding our topic and to clarify our assumptions. People who work with scenarios find more creative options than those who plan based only on the past and present. Strategies, plans, and actions can also be “future tested” against the different scenarios to assure robust initiatives rather than continued efforts based on outdated assumptions. Scenarios are thus a powerful method for systematically addressing the uncertain future.

Methodology

As we developed the scenarios there were aspects of the driving forces that call for greater explanation than the scenario narratives allow. This larger explanation is given in a series of end notes at the back of this report:

- Job loss to Automation –from 9% to 47% of U.S. jobs could be lost to automation by 2030ⁱ (included in all Scenarios).
- Abundance advances – a cluster of technologies that, if applied appropriately can lower the cost of living by providing in-home and in-community production of food, energy, and many home goods.ⁱⁱ (in Scenarios 3 and 4)

- Options for Increasing Low Income Housing Stock – options include expanded government funding; increasing neighborhood density; encouraging accessory dwelling units; low cost 3D printed homes.ⁱⁱⁱ (various options across the Scenarios)
- Guaranteed Basic Income – faced with permanently high unemployment, a Universal Basic Income would give \$12,000 a year to each adult and \$4,000 for each child.^{iv} (in Scenario 3 only).
- The Human Services Value Curve – a “vision” for the human services field^v
- Equity Rising – the transformative influence of equity as a value and attitude shift affecting policy, personal, and neighborhood political decisions^{vi}

IAF partnered with United Way of the Mid-South and community partners to develop the scenarios using the “Aspirational Futures” approach (see **Figure 1** below) which IAF has evolved over the last three decades. This technique develops forecasts and scenarios in three zones:

- A “zone of conventional expectation” reflecting the extrapolation of known trends, the expectable future (scenario 1);
- A “zone of growing desperation” which presents a set of plausible challenges that an organization or field may face, a challenging future (scenario 2); and
- A “zone of high aspiration” in which a critical mass of stakeholders pursues visionary strategies and achieves surprising success (scenarios 3 and 4).

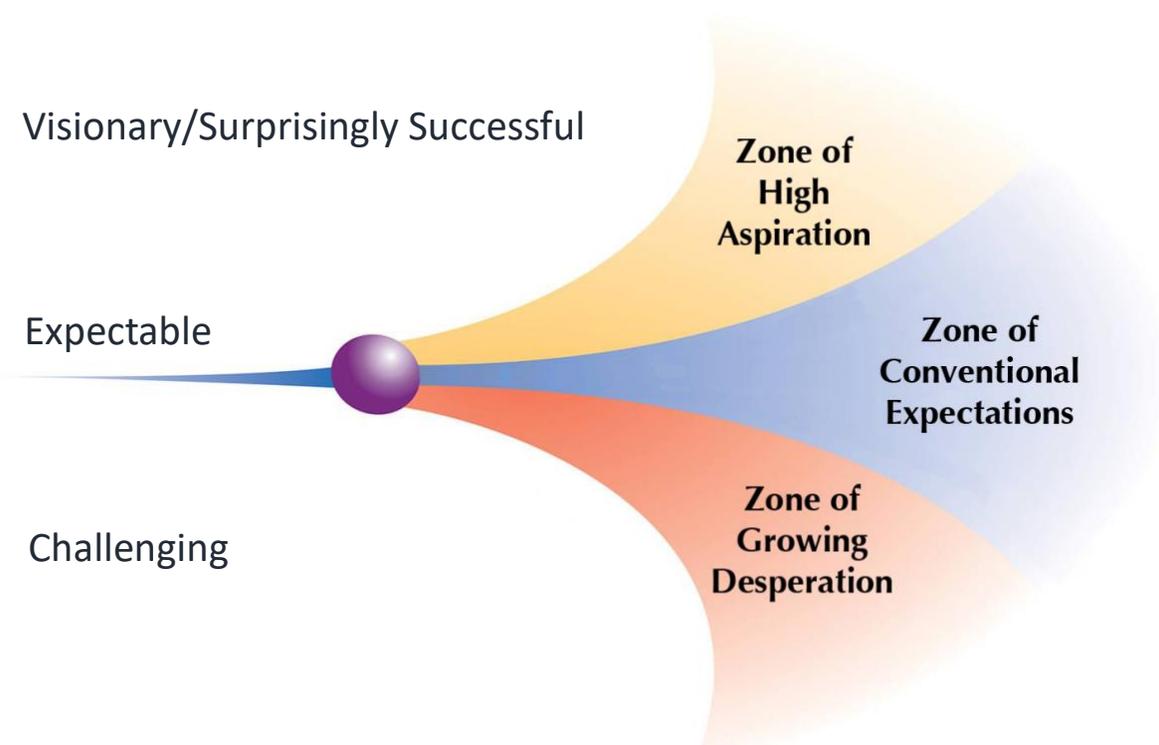


Figure 1: IAF’s “Aspirational Futures” Technique

The Memphis Human Progress and Human Services 2035 scenarios presented on the following pages were developed based on a review of human services programs and activities, plans and documents, and interviews with human service providers and partners. We explored “driving forces” and preliminary forecasts for the community as a whole, the economy, employment, the environment, technology, as well as trends within specific areas of human services (aging, behavioral health, children, family, disability, food and nutrition, housing, TANF/income supports). Forty (40) human service and community leaders assembled on November 16 to review the preliminary forecasts and develop the distinct scenarios presented below. The scenarios presented below will be used at the January 13 Scenario Workshop.

The first scenario is “expectable” or “most likely” given current trends. The second is challenging and considers some key things that “could go wrong” (including another great recession, flooding, funding cuts). The third and fourth are visionary. The third explores human progress in attitudes, technology, and policy – particularly a guaranteed annual income. The fourth explores surprisingly successful employment, technology, and policies. As you read these consider how likely each is. And consider how preferable each is – which would you want to take place.

Memphis Human Progress and Human Services 2035 Scenarios

Scenario 1: Tale of Two Cities

Human services were tested between 2017-2021, when funding was cut across the board and stricter regulations for programs were put in place. During this time, poverty in the area increased by 5%, and pocketed areas of extreme poverty remained or worsened. Memphis' philanthropic and faith-based programs worked hard to fill in the gaps left by limited federal funds and state funds. The effectiveness of human services in Memphis and Shelby County increased with successful data integration and collaboration, allowing for individuals and families to be screened for need through primary care physicians, schools, community organizations, and then directed towards services or automatically enrolled. In the 2020s, human service funding was periodically increased, though need and demand grew faster than funding. Preventative measures and two or multi-generational strategies were largely adapted; however, the accessibility and success of services increased and decreased across fluctuating funding and periods of diminished workforce. The national and Memphis economy grew slowly with periodic reversals. Automation and cognitive computing eliminated many jobs. Smart phones and their successors became ubiquitous and continued to shape how we live and how human services were delivered. Low cost solar energy production and storage, community gardening, and urban agriculture lowered the cost-of-living for low income families.

Memphis and the national economy grew slowly with periods of increased poverty. Racial divides persisted across income levels. Poverty increased by 5% over four years to 2021, accompanied by federal cuts in human services funding. In the 2020s there were periods of increased employment and human services funding and decreased poverty, but these would last roughly two years and were followed by lower employment, lower human services funding and higher poverty. This made the problems of blight, income disparity, concentrated poverty, and family instability worse. Black and brown community members continued to be disproportionately left out of the job market in the periods when employment growth would rise. This meant more children growing up in poverty through the 2020s. School systems in the County saw great variation in funding, usually along racial and geographical lines.

Churches and other faith-based organizations saw periodic increases in their membership. These churches often stepped in to fund or provide behavioral health, nutritional, and other support. Churches enhanced their network across Memphis to share resources and enhance their outreach and efforts. Virtual congregations increased, allowing all people to participate despite physical ability. Other community based service organizations joined in these networked partnerships and provided care. These networks partially filled the gaps left by federal and state cuts.

This networking was enhanced by Shelby County's leadership in successful data integration, through programs such as CoactionNet. Data was routinely shared across human services sectors and health care providers. This includes coordinating administration of multiple programs, using data from one program to determine eligibility and benefits for all potential program, and connecting enrollment and outreach across sectors. Human mentor programs develop, with varying levels of formality, which help people who need services work with someone, often a neighbor, to help them to better understand the services available and how they can be obtained. Unfortunately, this increase in eligibility led to smaller percentages of clients receiving benefits due to finite resources. Throughout the late 2010s and the 2020s, funding was reduced so that eligible recipients often received reduced benefits, or none at all.

Aging services are forced to adapt as the baby boomer population enters retirement. Senior centers become more common and more diverse- extending to informal group homes, and community centers and libraries. Healthcare and senior living providers, including governmental service deliverers, converged in the 2020s, forming partnerships across hospitals, home healthcare providers, physician's practices, behavioral health and human services. Data and communication systems for aging services allowed family members and other approved people to participate via video in medical meetings. Home care providers can see the elder's health information, history of hospital visits, and most recent home care services. Despite efforts from 2017-2021 to privatize and make other changes to Medicare services, the program remains relatively unchanged and a source of health care for elders, though the cost for co-pays and gap insurance increased. As the elderly population increased in the Memphis area, so did the number of disabled and isolated elders. Local organizations, although not always able to increase funding, are large enough in number to provide valuable services for this population. Resources across public, private, and philanthropic organizations joined together for physical and mental health programs for seniors. The strong church networks in Memphis were crucial in spreading awareness of services available and creating social networks to deliver services and to engage elders. Problems of blight, safety, access to transportation, and pocketed areas of high food insecurity remain.

Behavioral health services fluctuated over the years. Behavioral health became well integrated with primary care and school systems. Early identification of those at risk of behavioral health issues by human services and health care providers became more sophisticated and took advantage of the linked information from schools, medical records, and local peers. Research on ACES (adverse childhood experiences) contributed to the ability to identify at-risk youth and teens. Teachers, school counselors, and in-school clinics were trained to identify behavioral risks and needs. However, these services were only as successful as the budgets and workforce available to deliver them; there were low periods and high periods in Shelby County from 2016 to 2035.

The spread of **behavioral health services** was aided by increasing use of software programs that talked with patients and provided effective counseling. These, along with behavioral health smartphone apps, make care accessible to most people. These do help with anxiety, addiction, and anger management. People with more chronic or severe behavioral health conditions still require interpersonal care.

Child and family services adapt to the circumstances. The number of teenagers in foster care increases, particularly those with specific needs such as LGBTQ youth and/or those with exposure to trauma. Although efforts are made to serve this population, the resources are insufficient. Prevention became a higher priority in addressing child abuse and neglect during the 2020s. Two generational strategies and evidenced based programs increase across the Memphis area; these engage both the parent and child. There are efforts to ensure proper cognitive, social, and emotional develop of those aged 0-3 from daycares and parent trainings. Parents are incentivized to complete parenting class, and access prenatal

care. This becomes built into health care, and there are financial penalties for not participating; participating reduces health care premiums. Well-child care visits operate the same way. Economic downturn and increased inequality leads to a new strategy for family services, focusing on intentional education and job training, beginning in childhood and leading to pathways to success. Work force development agencies become increasingly important.

Generally, **disability services** grew more focused, benefit levels were reduced, eligibility requirements stiffened, even while percentage of the population with disabilities increased. Changes include limited public funding that required more justifying of personal needs. There was more virtual medical assistance and telehealth. The isolation of people with very limited mobility increased due to changes in public funding; these people are vulnerable to fall through the cracks. There are increased group living options, and more caregiver support. New construction adapts a universal and more accessible design. However, SSDI reduced benefit levels and raised eligibility requirements.

Income supports, particularly TANF experiences cuts, and stricter regulations such as a 12-month lifetime limits of benefits. During harsh economic times, more people in Memphis, particularly concentrated in certain zip codes, are excluded from the formal economy and unable to obtain cash assistance, so they turn to criminal activity for their survival. In the early 2020s, funding for TANF rebounded and the focus became less on cash benefits and more on employment. The refocus on empowering TANF recipients with education and skills training proved particularly important as the types and number of specific jobs available continued to shift due to increased computerization and the percentage of work on the gig economy rose. In Memphis, this economic transition was more successful for many low-income residents because the public transit system was extended and improved.

Housing services were shaped by periods of economic downturn and environmental disasters that compounded housing needs in an unstable renting market. Those needs could not always be served. When financial and human resources are available, concentrated housing redevelopments are introduced which maximizes the impact on various issues- including health and safety- for the neighborhood and community. Housing programs maximize their impact with wrap around services to sustain housing for those in need and consider an individualized approach. Housing services across Memphis, both public and private, use the Arizona Self-sufficiency matrix for each individual case to identify this best, case-specific plan of action. Housing services are well integrated, consumer focused, and use predictive modeling and advanced analytics to anticipate emergency housing needs. Problems of blight persist in some neighborhoods. Private funds contribute, particularly during federal cuts, to work to reduce crime through neighborhood improvement. New technologies such as 3D printing of houses and tiny homes expand in the Memphis area, as well as an increase in multi-generational living. This helps to provide more options for those in need of housing, somewhat lessening the human service burden.

Food and nutrition programs evolved due to funding shifts and a change in the way people produce food. Additional limitations were put into place such as physical and time barriers to access, and stricter guidelines about what goods can and cannot be purchased with SNAP benefits. However, gaining access to SNAP was simplified in regards to quicker and better information technology that links individuals and their data with other government programs. A tiered system for qualifying for SNAP was put in place by 2022. Once an individual or family is at or below a certain income level, they are qualified. If they qualify for other social services with similar requirements, they are automatically enrolled.

Deportations and other challenges for undocumented **immigrants** led to worker shortages in the state's food production sectors. Undocumented populations see a reduction in access to assistance programs and alternative venues for nutrition. Non-profit, faith based, and philanthropic organizations worked to close the nutritional void caused by SNAP cuts, and other restrictions. Their efforts include teaching people how to grow their own food in their home and in public spaces around apartment complexes. Food programs increased their collection and quick distribution of food that is close to its expiration date. Libraries, community centers and advocacy groups support training in self-sufficiency to make sure there is not a divide in access to these practices. Libraries emerge as growing centers, operating as seed banks and giving classes around self-sufficiency technologies and tools. More entrepreneurs thrive selling locally grown or made products.

Public transportation is reconstructed and improved to allow better accessibility for all. Technology became more important in delivering human services, through "televisits" with counselors, smart phone apps that do language translation, support communication and interactive games among generations within families and in neighborhoods, and provide behavioral health services. These benefit most people in the 2020s but there were some with chronic disease and more complicated needs who still needed the human in human services. The availability of humans to provide human services varied with the overall funding of the programs and the capacity and effectiveness of the computer programs.

Human services overall were challenged by increased needs and periods of decreased funding, but this ultimately led to better coordination across government, non-profit, and for-profit service providers, increased use of technology, as well as more individualized service plans for clients. Resources and data were better shared, two generation strategies were adopted, and services generally become more personalized. However, inequality in the social determinants of health and health outcomes remained. There are still stark contrasts between zip codes and across ethnicities. But despite challenges, human service providers across all sectors remain devoted to keeping the people in need in Memphis safe and well.

Scenario 2: Challenges Shape Caring

In both Memphis and the nation, human progress was repeatedly challenged. While the economy, in good times, was growing slowly, the Great Recession of 2008 hurt the country and human services. The region also suffered from repeated droughts and floods in the 2020s, with the Wolf River flood in 2026 proving to be the most damaging. These challenges most often hit low income residents hardest. Human service funding was cut in the late 2010s, with a rebound in the early 2020s and then major cuts during and after the Recession of 2023. Human service organizations were forced to "do more with less," to automate what they could; to collaborate to ensure that the funds and services provided are deployed most effectively for individual and family's unique needs; to reinforce their overworked and underpaid employees on the importance of their mission. This is true for government and non-profit sector human service workers. The faith-based and philanthropic history of Memphis does not disappear; at times, it is tested as people become focused more on their own survival. But community leaders, often from faith based organizations, emerge and help coordinate outreach and delivery of services and the encouragement of self-sufficiency practices. Services evolved – spurred by limited funds and by the creativity and inventiveness

of both human service organizations and those in need. This commitment and creativity in the face of repeated challenges were crucial in keeping hope alive in the Memphis area, providing resources effectively and encouraging the community to use its collective and individual capacity to generate resources.

Times were hard. A major challenge would be followed by a recovery then another challenge. Poverty increased by 10% by 2021 from 2016 levels, then the Great Recession of 2023 arrived followed by the Wolf River Flood in 2026. Employment suffered as jobs were lost to automation throughout the 2020s and some major employers downsized or moved operations out of Shelby County.

Human service agencies coordinated their services, shared data and could ensure that the services and funds provided, while not sufficient for the need, were delivered optimally. The reductions in funding and cutbacks in staff for human services agencies led them to work more efficiently within their organization and across the local network of providers. Churches and local foundations were leaders in trying to fill gaps, increase collaboration among providers, increase household and community self-reliance and generally maintain hope in the face of recurring challenges.

Although relative to other cities across the country, the cost of rent in Memphis was historically lower than in other cities, housing support levels were reduced for many. Low income housing options became less accessible, as well as less well-kept and safe. **Housing services** and supports were reduced or cut as the Great Recession led to lower federal, state and county funding. Housing services, like most other human services, had to determine who got what services, often with a large share of needy eligible families getting little or no funding or services. Access to quality housing continued to be racially segregated.

The problem of blight in housing increased drastically across low income and some middle-class neighborhoods in Memphis. Rental housing for low income seniors declined in quality and safety. Many low-income seniors who own homes could not maintain or repair them. These housing issues led to worsening crime, pests, disease, and depressed property values yielding lower property taxes to the City. Churches and other philanthropic groups, as well as the County, worked to rehabilitate homes and provide housing funds, but the demand far outpaces the resources and these housing funds mean that other needed services go unfunded.

As if the Great Recession was not enough, there was the Wolf River Flood in 2026. Flooding throughout the region occurred more frequently in the 2020s, but the greatest disruption was from the major Wolf River flood in 2026. Flood stage was 33 feet on the river at Hollywood Street. The river crested well above flood stage. The waters damaged homes and businesses, as well as Memphis' reputation. Some residences could be cleaned up and used again, but many could not. Some businesses left and fewer businesses were inclined to move to Memphis due to environmental risk- accompanied also with economic recession and infrastructure degradation. Churches, schools, hospitals, and dormitories all served as temporary shelters for those displaced by the flood. This provided shelter, warmth, and food; as well as a crucial source of hope and community support.

Behavioral health services decreased dramatically due to coverage cuts in health care, even while the evidence accrued to show these services reduce costs in the long run. Yet the need for behavioral health services increased due to the stress and trauma of economic downturns and natural disasters. The

availability of human counselors diminished year after year. Behavioral health providers did take advantage of technology advances, so that by late in the 2020s behavioral health services were delivered by intelligent agents and Doc Watson via smart phone apps. Siri and other smart phone apps included behavioral health counseling by 2020 but these were expensive at first and not integrated into TennCare and Medicare providers' tools until years later.

Abuse of substances such as opioids increased in the Memphis area with growing harm to individuals, families and communities. The economic and environmental traumas increased demand even as it diminished the ability of many to pay for their preferred opioids. Despite evidence from demonstration projects around the country showing that behavioral health can counter the epidemic of drugs, funding became scarcer during the 2020s.

Incarceration increased, fueled in part by substance abuse, poverty, and homelessness. Prisons and jails continued their role as the largest providers of behavioral health. The already high incarceration rates in Memphis became higher, and prisons were increasingly overcrowded and underfunded. Criminal justice "reform" leads to even higher levels of incarceration. Black and Hispanic populations were most affected because their arrest rates remained higher and their sentences longer than for the White population. The Shelby County jail exceeded its capacity repeatedly in the 2020s.

Increased poverty brought more homelessness and family instability, which led to increased abuse and neglect of children. Dealing with these problems was hindered by cuts to **child and family services**. Some of these children were about to enter the foster system, but not all those in need. Child protective service workers became increasingly overworked and strained through the 2020s. Social service providers adopted automation of tasks to deal with staff cuts. This has varying results, across agencies, funding availability, caseload, and responsiveness of workers and agencies. Tools such as cognitive computing and task automation helped get eligibility determined faster and enabled quicker access to some services. However, human service workers were not paid well and this made hiring trained personnel more difficult. Automation of child services, including developing individually focused plans did occur in the 2020s, but this would periodically fall short because of uncoordinated data across agencies, or changes in the accessibility and eligibility of services that were not put in the system.

Children increasingly lose foster care services at younger ages as budget cuts take place and fewer families take in foster children. Group homes, often overcrowded, became more common. Throughout the 2020s, children traumatized by abuse and neglect were at risk of not receiving proper services, with cumulative impacts to these children that then carry into their adult lives, and often the lives of their children. A coalition of schools, church and youth groups, child and family service providers unified in their effort to identify children at risk of adverse childhood experiences (ACEs) and provide preventive interventions and post-event services. Although resources were limited, these groups were successful in reaching some children and positively influencing their lives. Many different types of organizations partner to prevent ACEs, for example the Family Safety Center, partners with churches to promote awareness around domestic violence, which could then decrease the trauma exposure of a child or teenager.

Like all human services, family service organizations experienced recurring reductions in funding, even as family violence and instability worsened in the 2020s. **Adult protective services** and **refugee assistance services** were cut repeatedly from 2017 through the late 2020s. Other programs that experienced cuts or elimination included: school clothing provision, transportation assistance, home repair funding, and job training. These cuts meant that family service workers were laid off across the

region, resulting in longer waiting periods to process and deal with the remaining cases in those services that had not yet been automated.

Child and family service workers remain committed to their clients, despite limited resources and high stress, and ultimately integrated their work with technology such as cognitive computing to cut costs and do the work more efficiently.

Disability services and benefits were drastically cut, and the requirements for eligibility became very stringent. The most common type of disability in adults continued to be mobility related. In the Memphis area, diabetes-related disabilities such as loss of vision and loss of limbs increased. People in Tennessee with diabetes (both diagnosed and undiagnosed) increased from around 770,000 in 2015 to over 1 million in 2025. Those with complications- including visual impairment, renal failure, and leg amputations- increased from around 99,000 in 2015 to around 148,000 in 2025. Memphis continued to have a disproportionate share of the state's diabetes cases and complications, particularly among the residents of its lowest income zip codes. As access to health care was diminished and co-pays increased, low income residents with diabetes often missed care or medication – often accelerating their path toward amputations and other disability. The same pattern of increased disability accompanied the dramatic rise in dementia and Alzheimer's in those over 65 and even more those over 85 – with disproportionate impact on African American and Hispanic elders.

Aging services are strained with increased numbers of seniors in Memphis, including those with Alzheimer's and diabetes. Without proper transportation, many seniors are left isolated from what services are available. Blight and food insecurity worsen. The needs of this population outpace the ability of providers.

The trend of wealthier residents leaving the city continued. Those living outside of city limits do not pay property taxes to the city, though they may use city services, which serves to further leave the poor communities behind. The greater divide between city and County residents serves to weaken the power of black and Hispanic voters, and gives greater political power to suburban residents at expense of those in the City. Residents also left parts of the city in the aftermath of the Wolf River flood, leaving behind unrepaired and vacant buildings and homes.

Income support services decreased. TANF benefits had been eroding across the nation for decades, as year after year fewer eligible families were receiving benefits. Tennessee lowered the dollar amount of cash benefits and the length of time they could be received. This disproportionately hurt women and children as single, mother-led households increased. By 2035, only about 9 out of 100 eligible families receive TANF benefits, and even these TANF funds are not enough to cover the costs of basic needs for many of the families fortunate enough to get them. The cuts to TANF were exacerbated with cuts to SNAP and other programs that help children and families.

Food and nutritional services evolve. In 2016, the federal government paid all of SNAP benefits, and federal and state governments shared the administrative costs. Tennessee increased restrictions on how SNAP funds could be spent, and how long recipients could receive SNAP. The severe economic recession in 2023 further exacerbated food insecurity- but unlike in past recessions, federal spending for SNAP benefits could not rise with the need. In Tennessee, 20% of the population was enrolled in SNAP in 2014. This dropped to around 7% in the late 2020s before the program was eliminated altogether. As a response, in Memphis, public and private funds were increased for nutritional support, particularly focused on schools and early childhood centers.

Food deserts and food swamps increased as an issue across the greater Memphis area, disproportionately impacting low income and minority communities and senior citizens. Economic recessions, particularly the big one of 2023 drove some stores out of business, limiting the options for purchase. Public transportation in the Memphis area was increasingly strained in its ability transport people easily to stores with healthful and affordable options, and periodically stopped service to certain neighborhoods with road closures, bridge failures and other damage.

Criminal justice returned to a “get tough” stance and this led to higher levels of incarceration. Services for those re-entering society are stretched thin, but there is a focus on finding jobs though this is more difficult in the frequently challenged local economic climate. In particularly desperate situations in the 2020s, some individuals consciously committed crimes to be incarcerated to ensure they are fed. Ironically when the Memphis jail reached its capacity, these were the first offenders to receive suspended sentences.

Given the increasing poverty and decreasing human services and funding, the human services and public health community encouraged and supported **enhanced home and community self-reliance**. Home and community co-production increased. Food production in homes and community gardens increased dramatically. The trading of time, tools, and services did come to meet some needs and increase neighborhood safety and community well-being. Droughts, floods, and the Great Recession repeatedly challenged this community co-production but also spurred residents to redouble their efforts.

Nearly all residents of Shelby County were negatively impacted to some degree by the economic recession and environmental events, but those who are poor or low-income are most harmed. This is also the population that would most benefit from services. The funds available for resources vary across years and administrations, but even during times of increased funding, those funds fall short of meeting needs. Times throughout the 2020s were difficult- poverty, crime, social unrest, and environmental disaster eroded the fabric of Memphis community.

Human service organizations overall were forced to “do even more with even less.” Tasks and processes were automated when possible, and collaboration increased to ensure the funds and services provided are deployed most effectively for individual and family’s unique needs. Despite human service employees being overworked and underpaid, the importance of their mission was repeated and reinforced, for human service workers in both government and in the non-profit sector. The faith-based and philanthropic communities stepped up repeatedly – even when around the Great Recession their congregants were contributing less and the foundation portfolios value and income dropped. Community leaders, often from faith based organizations, emerged to help coordinate outreach, the delivery of services, and the encouragement of self-sufficiency practices. Human services evolved – spurred by limited funds and by the creativity and inventiveness of both human service organizations and those in need. This commitment and creativity in the face of repeated challenges were crucial in keeping hope alive in the Memphis area, providing resources effectively and encouraging the community to use its collective and individual capacity to generate resources.

Scenario 3: Rock and Roll Again

Human Services and human progress were redefined and transformed through a national and local focus on equity- this contributed to increased social and economic fairness, including more equitable access to resources. The economy was transformed as many jobs were lost to automation. The 2020s brings about the national introduction of an unconditional basic income for all citizens. This income largely eliminates cash transfer programs, such as SNAP, TANF, and others, but positively impacts Memphis and Shelby County through allowing people stability and independence. In addition to having the basic income residents and their neighborhoods produce many of their needs. This self-sufficiency is aided by technology for enhanced community gardening and in-home food production and local manufacturing (3D printing). While reduced, problems such as child abuse, physical and mental disabilities, and homelessness persist. Human services address these more effectively, automating some of its work, supporting prevention and individual and community self-reliance. Human progress extends beyond survival, and focuses on how people can physically and emotionally thrive.

The two-decade period from 2015 to 2035 was shaped by economic transformation, increased family and community self-sufficiency; a greater sense of fairness and equity; and more progressive policies after 2020. Job loss to automation and computers, including truck and cab driving, retail sales, health care, legal and accounting services grew in the late 2010s and throughout the 2020s.

In the late 2010s the economy, particularly the stock market, grew rapidly but job losses to automation continued. Minimum wage increases were stalled or abandoned and welfare, human services, and income support were made more difficult to obtain and the length of time they could be received was reduced. Families in and near poverty were more challenged and moved toward some self-sufficiency wherever they could. Home food production and community gardening increased dramatically. Neighbors had always helped each other in Memphis, but they became more systematic in trading services, providing childcare and elder care, homegrown food, and more.

Simultaneously, nationally, and in the Mid-South, there was a growing focus on pursuing fairness and equity. Consistent differences in opportunity, discrimination, poverty became understood as wrong and offensive. Conversations and actions about inequality, such as systematic oppression, became more impactful due to better listening to all perspectives. Shifting to equity became the next civil rights movement. It affected many sectors: policing and public safety; economic policies; taxation; education; housing and health care.

A major policy shift was the creation of a **basic income guarantee**. After years of seeing that the economy can grow while leaving a larger number of folks behind and that job loss to robots and automation was getting worse (and was affecting the middle class as well as the poor) a national basic income guarantee, was put in place. This provides citizens \$12,000 annually for each adult and \$4,000 annually for those under 18. This guaranteed income, although relatively low, was consistent and led to greater family stability, a reduction in family violence, and child abuse. The guaranteed income also contributed to lower teen pregnancy rates and increased high school graduation rates.

Communities were also strengthened through different **technologies and alternative economics that supported “abundance” and self-reliance**. This includes, by the late 2020s, household and community co-production of food and energy (including low cost solar, wind, and hydrogen power, fuel cells, and

small scale nuclear, with in-home and in-neighborhood energy storage). 3D printing made housing, clothing, and medical goods affordable, accessible, and customizable. This impacted how human services are delivered. These advances reinforced family and community stability and social equity, which contributed to effective and safe neighborhoods for raising children. When some Memphis communities made great strides in improving the lives of their most vulnerable members, especially children, word went out quickly and other communities followed in their path. People in neighborhoods held conversations beyond their immediate community and helping develop a larger shared sense of identity. People were empowered by their self-reliance and integration and brought their own sense of hope.

Human services transformed during these two decades as well. Human services became more effective and efficient, using automation and expert agents for much of its work by 2025. Data on individuals, families and neighborhoods was securely shared across agencies. A person eligible for one program was automatically enrolled in any with the same eligibility. The need for specific human services – children, family services, disability, housing was reduced and the role of human service agencies shifted as the guaranteed basic income supported families. Two, and multi-generational strategies were successfully implemented, focusing on preventative measures and addressing root causes of child and family crisis, including poverty and substance abuse. The use of cognitive computing aided children’s services and most other human services by enabling upstream approaches. Memphis’ CoactionNet allowed the integration of data on human service needs, school attendance and grades, neighborhood conditions, and other services the family was receiving. This data and its sources grew over time and fed predictive analytics software that allowed human service agencies to improve their effectiveness, including early intervention for kids and families. Health and human services integrate successfully as health care becomes accessible to nearly all in the 2020s and transforms.

Income support services - particularly TANF, SNAP, and the earned income tax credit - were largely phased out and then replaced by the guaranteed basic income. Likewise, foster care payments were eliminated as the basic income for the child follows them to foster care. Immigrants still received some income support, particularly in the 2020s after immigration reform made many legal residents. Comprehensive **immigration** reform in the early 2020s resolved issues of access to assistance for undocumented people. While they do not receive basic income payments, there are a range of services and income supports that remain for immigrants who are not yet citizens. There are some individuals, like those with severe disabilities, who receive larger support payments, but generally the income support programs were eliminated or significantly reduced after the basic income payments were in place.

Human service agencies (public agencies and community groups) helped each family develop their plans and the ability to move beyond the basic income and thrive. The plans included access to parenting and child care services, financial literacy classes, community co-production opportunities for food and other items, and opportunities to trade services, volunteer for others and contribute to the community.

Behavioral health services, was integrated into health care and by the early 2020 health care re-reform had achieved near universal access to health care. A major change in the 2020s is the provision of behavioral health services via smart phone apps. These are given to consumers by their health care providers and are integrated into the health care system’s data bases. Some of these apps resembled Siri, providing counseling services using the most effective tone, dialect and engagement style for the person to treat conditions such as anxiety, addiction, and anger management. Some individuals require interpersonal behavioral health care, or a combination of human and computer care. By the mid 2020s

behavioral health had become effective and highly predictive service that is supported by ongoing research that connects every stage of human development, from before conception through death, fed by information from large populations who provide data on their ongoing health. Given this coordinated information gathering, behavioral health interventions (used by humans and computer apps) are quickly evaluated and refined, insuring a high likelihood that the right intervention will be used for everyone.

Aging services evolved as well. People, particularly low income families, share and trade services, time and goods. This includes assisted living services, in-home care and cleaning services. Seniors likewise are able to contribute to others. Sometimes these exchanges use Time Banks, and in other cases occur through virtual navigation tools provided by local non-profit groups. Some elders prefer to buy these services with their basic income or additional disability payments. This enhanced interaction helped to rebuild the social fabric of neighborhoods. Seniors are better valued in communities and able to use their skills. Advances such as driverless cars, better and more affordable prosthetics using 3D printing, and disability technologies such as smart homes empower elders and increase their ability to interact in the community. Similarly, **disability services** become more holistic and inclusive, addressing individual needs and benefit from technological advances. Accessible and viable employment and volunteer options for seniors and persons with disabilities grew, empowering families.

Senior centers became more common and varied in their approach during the 2020s to accommodate the more engaged social lives elders seek in the 2020s. Formal, informal, and virtual senior “centers” all grew. Most communities integrated senior services into libraries, schools, churches, cafes, and other settings, including homes and neighborhood. The village concept, which spread in many Memphis communities, allows sharing of services and access to proven handyman services. Human service providers, using their integrated data systems coordinated the information systems in neighborhoods, particularly those with village coordination to further individualize senior and family services. By the mid-2020s most low income elders were comfortably using their smart phone systems to enhance their interaction with friends and family. Volunteers - elders and others enabled to volunteer by their basic income- reach out to interact with isolated elders. Cognitive and physical declines that would have made elders “disabled” by the 2020s have less impact thanks to low cost prosthetics, home information systems, and personal intelligent agents (many of which are supplied by the person’s Medicare provider). In turn, most elders give their time and attention to others – mentoring young people, interacting with other elders. This increased giving and interaction served to increase elders “social health,” decrease isolation, and further slow their physical and mental decline.

Housing services across Memphis, both public and private, use the Arizona Self-sufficiency matrix for each individual case to identify best, case-specific plan of action. This helped determine the family’s needs and match them with services and other resources in their communities. The basic income payments altered many family’s relationship to housing. They could make rent payments more consistently. The basic income was not enough to cover rent and other expenses in many neighborhoods and so most low income folks continued to work. Housing services are well integrated with other human services, consumer focused, and use predictive modeling and advanced analytics to anticipate clients’ needs. Emergency housing needs, while diminished because of basic income payments, still occur. The department’s systems know if there have been layoffs or other challenges and can check with families if they are at risk of missing utility or rent payments. Basic income serves to make rapid rehousing more effective as people often had had bad credit, from unpaid utility bills or history of eviction. Basic income funds made these challenges less frequent.

Memphis and Shelby County supported new development that includes housing that is accessible for low incomes and livable for all (for example, wheelchair accessible standards are universal). This is more cost effective in the long term. Public and private new buildings, or renovations, consider sustainability and easy maintenance in their design.

By the late-2020s energy costs had dropped dramatically with low cost solar and fuel cells, and effective in-home and in-community storage. Federal and state policies steered local utilities into supporting effective, decentralized grids where energy can be used from the grid or contributed to it. Most homes generate surplus electricity at various times of the day and get credit for the energy they put into the grid. Incentives and regulations led landlords to install these systems in their rental properties and pass the savings to their tenants.

Child services changed as family income and poverty were shaped by stable basic income funds. Decreased poverty contributed to a decline in child abuse and neglect and reduced need to send children to foster care. More families could provide foster care, as the monthly portion of the annual \$4,000 basic income payment per child continues for the child as they enter the foster home placement. The need to put a child in foster care was lessened due to an increase in in-home services. This system works with the child and parent, or other family members towards to create a safe and healthy environment. Child welfare workers, aided by the predictive analytics of the system can anticipate the needs of families and of each foster child, as well as the capacities and areas where additional resources or training for the intact family or the foster family are needed.

All Memphis area kids by the mid-2020s had access to enriching arts experiences, such as dance, music, and museum visits. These engaging programs were incorporated into education in effective, culturally appropriate ways. These proved particularly helpful to children with exposure to trauma. **Family services** shift as all parents get “parenting education.” This virtual or in-person training aid parents in dealing with their children’s developmental milestones as well as trauma; this is otherwise known as psycho-education. Informal support groups of parents, often including cooperative day-care, exploded after BIG payments were universal. Parents could focus full time on child-raising and neighbors shared their day-care, often supported and housed in local churches and community centers.

The **employment services** shifted - as basic income payments led to the demise of TANF, employment services remained to help families rise above the basic income level. Widespread job loss to automation was occurring in jobs such as truck driving. ‘Work’ was redefined to include volunteering or otherwise contributing to the community, as well as home and community co-production of food and other goods. But paid work was still relevant to pursue and appropriate workers remained in need despite job loss to automation. Job training was strengthened through partnerships with employers in need. These employment service organizations worked with awareness of how to train those rehabilitating from domestic violence, or those with other special circumstances. Technical training from community colleges came tuition-free. Public and private transportation evolved in the County, effectively eliminating transportation barriers which allows people to get to and from training and employment.

Food and nutrition services were shaped by basic income payments, self-sufficiency and technology advances. Food insecurity has been significantly reduced by self-production of food in homes, community co-production, utilizing advances in hydroponics, aeroponics, and urban and vertical agriculture, 3D printed foods, cultured meat and other advances in wide spread use by the late 2020s. In addition to technology, Memphis built upon its agricultural history and heritage, tapping into the

knowledge of elders to teach home gardening, local food culture, and small scale agricultural practices. Universal pre-K and elementary school includes a gardening component and education around nutrition, food preparation, and production. In addition to their home and community food production Memphis residents used their basic income funds for food as well. Food deserts and food swamps were reduced, either by grocery stores moving into neighborhoods, and by enhanced delivery of food through self-driving delivery cars and trusted community organizations working with local farms.

Scenario 4: Abundance, Good Work, Good Caring

Tennessee's economy was strong and in the 2020s supports robust budgets for services. Public transportation was revamped and became affordable and accessible for all. Memphis flourishes and employment grows as workforce development and public education align with new job opportunities. Policies, economics, and attitudes shifted. A national \$15 an hour minimum wage grew to be a living wage in the mid-2020s. In Memphis and in the country, attitudes shifted away from a focus on "I" to a focus on "we" and on equity. This changed the concept of human progress and the way human services were planned and delivered. Full and equitable employment, including the living wage, was successfully pursued. New job prospects were identified early and people in the Memphis area were trained and educated for meaningful employment. Technology advances support families and neighborhoods producing some of their needs and becoming more self-sufficient. The vast and historic inequalities within Memphis were both acknowledged and confronted to create positive change. Poverty in the poorest zip codes in the City and County was dramatically reduced and those neighborhoods were safe and more self-reliant. Human services shift towards a wellness model, addressing the physical, mental, and emotional well-being of individuals and families. Human services became more integrated, automated, efficient and effective. There are adequate funds, including income for the smaller number of human service staff and adequate overhead for human service organizations. Each client has a case manager/mentor who ensures they get the most appropriate services as well as support and encouragement for self-reliance. Many human service tasks were effectively automated and delivered via smart phone apps and their successors in the 2020s. There are fewer human service workers, but they specialized in providing human touch when needed and in doing quality assurance for the automated services.

The growing change in attitudes— in part, what propelled the Trump election — around a strong sense of unfairness. This sense had been growing in several, seemingly disparate places, such as; the women's movement, the LGBTQ movement, Black Lives Matter, and others. There were segregated groups feeling wronged — white unemployed workers initially did not connect. But throughout the 2010s behind very real and more visible animosity across race, ethnic and gender lines, there was a less visible but powerful and growing sense of the interconnected inequities. By the early 2020s, this awareness of inequities affecting others and support for greater equity was having a powerful effect in communities, state legislatures and Congress. In Memphis and Shelby County community building across races, religions and neighborhoods led to real dialogues and shared support for inclusive economics and development, enabling self-reliance, and ensuring appropriate low income housing.

The economy continued to evolve, with slow growth, greater job loss to automation, as well as a national minimum wage that grew to a living wage in the 2020s. Certain sectors in Memphis did provide job growth, including aspects of health care, hospitality and sustainable urban agriculture. And small business creation, including in Memphis' low income neighborhoods created many jobs. All jobs paid the equivalent of \$15 an hour or more by the mid-2020s. So, despite job loss to automation, net employment in Memphis grew – and the schools and other job training services ensured effective worker readiness to take those jobs.

Families also became more self-reliant – producing some of their food and other goods and trading time and services. “Abundance advances” enabled some of this self-reliance. These technologies provided highly productive in-home food growing, local manufacturing (3D printing) of many basic goods. Local materials were fed into 3D printers to produce the components for rapid home construction of quality, low cost homes. Solar and other renewal energy and in-home or in-community energy storage was low cost. Policies promoted the spread and use of these abundance advances – requiring landlords to install and use low cost energy and share the savings with their tenants. Part of the work of human service workers and organizations was supporting low income families in the effective use of these advances.

This reinforced policy like a living wage; integrated income neighborhoods; zoning to allow additional units in or on properties; supporting “tiny home” development as well as low income multifamily housing. Self-driving vehicles revolutionized travel and car ownership. It could have threatened Memphis public transport. But, consistent with the attitudes calling for equity, the transportation department became creative and integrated low cost self-driving vehicles into its services to ensure region wide public transportation.

Human Services overall transformed; supporting the pursuit of equity, family self-reliance while becoming more effective, and more automated in its service delivery. Recognizing the long-term conditions for the families they serve, human services implemented two or multi-generational strategies – working with and for the child and parent; for the mom and her infant; reducing adverse childhood experiences that first affect the child and their children years later. Health care and human services develop meaningful partnerships across service deliverers, both public and private. A data base for predictive analytics was well developed by 2025, growing out of CoactionNet, which serves to identify at-risk individuals, identify vulnerable communities and circumstances that prompt preventative actions, and direct people towards the most appropriate services. These human services are rigorously evaluated for outcomes, enabling both quality improvement and cost reduction throughout the 2020s.

Part of multi-generational strategies for human services includes confronting the institutionalized inequality across Memphis. Government agencies partner with faith based organizations, schools, and other influencers and stakeholders to allow community and neighborhood members to define what their successes look like. Then, plans are created and people are better able to fulfill their visions of hope. This happens at many levels. For example, prison reforms and alternatives to incarceration emerge as part of federal legislation, which helps stop mass incarceration of Black and Hispanic men. Schools across geographic and income lines in Memphis receive adequate funding. More people of all backgrounds feel empowered to become involved in local government and community organizations.

Aging services are well funded. The tax base for the City and Shelby County improved in the 2020s, leading to adequate funding for aging and other human services. Government departments and community groups support the use of enhanced technology for seniors, as well as increased social

interaction and volunteering. By the mid-2020s even elders spend part of time in virtual reality. Human service workers facilitate Memphis leads the way with new construction, including building homes that are energy efficient, wheelchair accessible, and easy maintain- a certain percentage of these homes are allotted for seniors. People can age in place. Senior group living and co-housing grew steadily through the 2020s, as did “smart homes” for many seniors.

Family and child services became more personalized, holistic, and supportive. Family planning and reproductive health services are accepted and accessible. Teenage pregnancy rates decline, and the teens who do have children are supported physically and emotionally. Empowered neighborhoods leaders emerge and communities thrive.

Family services focus on employment and empowerment. This relates back to the role of living wage and Memphis’ evolving economic opportunities, such as work in sustainable energy production, for which qualifying people are able to participate in free or subsidized training programs. **Income support services** are less needed due to strong wages and high employment; when they are required, each client receives coaching to make their support most successful.

Preventative measures are the priority with **child services**. This involves stabilizing families, and intervening early if a situation of abuse or neglect is suspected. Child welfare is less of an issue across Memphis due to family and community security. However, problems persist. Child service workers can provide comprehensive and individualized care, as much of their paperwork was automated, allowing more time spent in the field. Fewer children must be removed from their families and put in foster care. Foster families and human service workers were well trained to meet the needs of children with all backgrounds. Child care and pre-K were enhanced and better funded. Child care providers, aided by a variety of technology, accelerate infants’ and young kids’ learning. This contributed to Memphis’ ability to boast of a 98% kindergarten preparedness rate.

The federal government passes comprehensive **immigration reform** in the 2020s, keeping families safe and legally able to access health care, employment, and human services.

Adult protective services in 2025 focus on plans that enhance the vulnerable adult’s choices with their services. Many cases of adult mistreatment are identified through primary care screenings, which enables prompt intervention, often preventing or lessening recurring mistreatment. Studies show that when caught early (e.g., before verbal abuse escalates to physical attacks) the stress levels and psychosocial damage is far less. Human services enable the community to interact with their neighbors, particularly their frail elder neighbors and these neighbors contribute to the early warning of mistreatment. By 2025 adult protective services are highly rated human services, even though they rely on fewer human service workers and more social networking tools (the 2020 successors to Face Book that most neighbors now routinely use).

Everyone has access to affordable healthcare that has become more wellness and prevention focused, aiding people to be healthier. Human services integrate with health care and likewise use a more comprehensive wellness model, addressing food, exercise, family and neighborhood safety, behavioral and physical health. People are healthier and live longer in the 2020s. **Behavioral health** is more widely accessed, in part because health care is universally available and in part because behavioral health evolved to be largely driven by intelligent agents – smart phone apps like Siri, provided by your health care system, routinely give effective behavior health counselling.

A more person-centric wellness approach to **disability services** emerged. Physical and mental services were customized for each person with a disability. These individuals were better guided through a continuum of care providers, including public agencies and non-profits. Disability services in the instances of trauma continue to follow the individual as they are discharged from hospital. Rather, care persists in a customized way; for example, individuals receive home rehabilitation services as needed, intelligent agents and robotic rehab exercise trainers accelerate recovery, and if a person can work to some extent, they are provided job services.

The poverty measures, nationally and for Memphis were revisited in the 2020s- for the first time since the 1960s- and changed to truly reflect the needs of families. This restructures **income support services**. These changes are then reflected in TANF benefits. However, the emergency need for TANF's is diminished because of increased, consistent, and good paying employment in the area. The living wage, which is adjusted periodically for inflation and to reflect need and empowers more financial freedom. Workforce development and public education collaborated to align school and training with job opportunities.

Benefit and service eligibility requirements that led to abrupt decreases or removal of the welfare payments if the client had minor increases in their income – understood as the “welfare cliffs” - were adjusted to allow more work and income without loss of benefits.

SNAP continues to provide **nutritional support** to low income families. Benefits were adjusted and expanded as needed. As home and community food growing became more common, and there was a resurgence of southern food traditions. Food and nutrition education, including gardening, begins with young children, and continues. Urban and community agriculture grew, some using kits like Helical Outpost, that provide sustainable integrated hydroponic greenhouse and power station with satellite internet and water filtration. These community growing kits are purchased or given to many low-income Memphis neighborhoods, often serving as neighborhood community centers.

Other technological advances, such as 3D printing for homes and prosthetics, low cost renewable energy use and storage, and aeroponic farming improve people's lives and take away some of the needs that give rise to human services. Programs are created to assign case managers to each client or family and create customized service plans. Staff is well trained and well valued. Aided by technology, human service workers are no longer overwhelmed and are adequately paid. Human services, combined with a strong economy and social progress in Memphis, can adjust to changes and serve people and support their self-sufficiency.

End Notes

ⁱ Job loss to automation

Job loss to automation and cognitive computing will have a major impact on the economy, family income, and the need for human services in the years ahead. We believe this has been happening and it will eliminate more jobs through the 2020s. As with past disruptions of this type, new jobs will be created. Some of these new jobs are identified in the sources below. And there will be teaming of AI and human workers (as precedent; in 2017, the best chess competitors are teams of humans, without grand master chess champions, and multiple computers, but not supercomputer as often used for IBM's Watson). Yet overall, the number of new jobs created is likely to be far fewer than the jobs lost.

For these Human Services and Human Progress 2035 scenarios, we have used the Forrester estimate of a net loss, by 2025, of 7% of US jobs (see first bullet below). And we assume that net job loss will accelerate in the later 2020s and 2030s. We have worked with human service experts to apply and check forecasts for specific human service jobs as well. Below are highlights of the forecasts that indicate the range from which we developed the forecasts we are using in our scenarios.

- Forrester forecasts in the report "The Future of White-Collar Work: Sharing Your Cubicle With Robots" that cognitive technologies such as robots, artificial intelligence (AI), machine learning, and automation will replace 22.7 million (or 16%) of U.S. jobs, while 13.6 million will be created — a net loss of 7% of U.S. jobs by 2025. Office and administrative support staff will be the most rapidly disrupted. Newly created jobs will include robot monitoring professionals, data scientists, automation specialists, and content curators.
Forrester Research. (2017). *The Future Of Jobs, 2027: Working Side By Side With Robots*.
As cited in Schiller, B. (2015, August). Robots Will Take Your Job, But First They'll Be Your Annoying Coworker. Retrieved from <https://www.fastcompany.com/3050428/robots-will-take-your-job-but-first-theyll-be-your-annoying-co-worker>
- Within five years (of 2016), robots and so-called intelligent agents will eliminate many positions in customer service, trucking and taxi services, amounting to 6 percent of jobs, according to a Forrester report. "By 2021, a disruptive tidal wave will begin," said Brian Hopkins, VP at Forrester Research. "Solutions powered by AI/cognitive technology will displace jobs, with the biggest impact felt in transportation, logistics, customer service, and consumer services."
Taylor, H. (2016, September). AI will eliminate 6 percent of jobs in five years, says report. Retrieved from <http://www.cnn.com/2016/09/12/ai-will-eliminate-six-percent-of-jobs-in-five-years-says-report.html>
- McKinsey Global focuses on probability of tasks within occupations being automated and determined that 49% of time spent on tasks could be automated with current technologies, but only 5% of total jobs could be automated away in the report by McKinsey Global (2017). *A Future that Works: Automation, Employment, and Productivity; Harnessing Automation for a future that works*. Retrieved from <http://www.mckinsey.com/global-themes/digital-disruption/harnessing-automation-for-a-future-that-works>.
- An OECD policy brief forecasts that an average of 9% of US jobs (13 million) are at high risk for automation; these are jobs for which 70% of the tasks could be automated.
OECD (2016). *Policy Brief on the Future of Work: Automation and Independent Work in a Digital Age*. Retrieved from <http://www.oecd.org/employment/Policy%20brief%20%20Automation%20and%20Independent%20Work%20in%20a%20Digital%20Economy.pdf>.
- A study by the UK office of PWC analyzed the workforce in several countries. In terms of specific sectors, it found different degrees of risk for automation. The following economic sectors have varying

probabilities of automation, represented as a percentage: transportation and storage (56%), manufacturing (46%) and wholesale and retail (44%), but lower in sectors like health and social work (17%). For countries overall, the jobs at high risk of automation by the early 2030s are U.S. (38%), Germany (35%), UK (30%) and Japan (21%).

PriceWaterhouseCooper. (2017). *Will robots steal our jobs? The potential impact of automation on the UK and other major economies*. PWC UK Economic Outlook. Retrieved from <https://www.pwc.co.uk/economic-services/ukeo/pwcukeo-section-4-automation-march-2017-v2.pdf>

Nelson, E. (2017, March). Why Americans have a higher risk of automation than jobs in Germany, the UK, and Japan. Retrieved from <https://qz.com/941163/pwc-study-automation-risk-is-higher-for-american-jobs-than-for-workers-in-germany-the-uk-and-japan/>

- One of the most cited studies is from Oxford University researchers Frey and Osborne. They project about 47% of total U.S. employment is at risk for automation by 2030.
Frey, C., & Osborne, M. (2017). The future of employment: How susceptible are jobs to computerization?. *Technological Forecasting and Social Change*, 114, 254-280. Available at http://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf
- The Bain & Company 2018 report “Labor 2030: The Collision of Demographics, Automation and Inequality” states that “In the US, a new wave of investment in automation could stimulate as much as \$8 trillion in incremental investments and abruptly lift interest rates. By the end of the 2020s, automation may eliminate 20% to 25% of current jobs, hitting middle- to low-income workers the hardest. The study estimates an average annual displacement of 2.5 million workers from 2020 onward over the next 10 to 20 years.
Bain & Company. (2018). *Labor 2030: The Collision of Demographics, Automation and Inequality*. Bain. Retrieved from <http://www.bain.com/publications/articles/labor-2030-the-collision-of-demographics-automation-and-inequality.aspx>.
- In developing countries job loss could be higher. Harnessing new World Bank data that builds on Frey and Osborne’s original methodology, the authors consider the risks of job automation to developing countries, estimated to range from 55% in Uzbekistan to 85% in Ethiopia, with a substantial share of jobs being at high risk of automation in major emerging economies including China and India (77% and 69% respectively).
While manufacturing productivity has traditionally enabled developing countries to close the gap with richer countries, automation is likely to impact negatively on their ability to do this, and new growth models will be required.
The impact of automation may be more disruptive for developing countries, due to lower levels of consumer demand and limited social safety nets. With automation and developments in 3D printing likely to drive companies to move manufacturing closer to home, developing countries risk ‘premature de-industrialisation’.
Even within countries, the impact of automation will not be a ‘one size fits all’ issue, leading to the divergence of the fortunes of different cities. While a number of cities may have been affected by, for example, offshoring of manufacturing in the past, the expanding scope of automation now means that even low-end service jobs are at risk, making a different set of cities vulnerable.
[Technology at Work v2.0: The Future Is Not What It Used to Be](https://www.oxfordmartin.ox.ac.uk/publications/view/2092). Retrieved from: <https://www.oxfordmartin.ox.ac.uk/publications/view/2092>

New Jobs Created

While there will be a net loss of positions, technology will create new jobs.

- The number and types of jobs projected span a wide range. Forrester forecasts that by 2027, there will 14.9 million jobs created (although there will be a loss of 24.7 million jobs in the same period). New jobs will be created in software, engineering, design, maintenance, support, training, and other specific areas. Forrester Research. (2017). Forrester Predicts Automation Will Displace 24.7 Million Jobs and Add 14.9 Million Jobs by 2027. Retrieved from

<https://www.forrester.com/Forrester+Predicts+Automation+Will+Displace+247+Million+Jobs+And+Add+149+Million+Jobs+By+2027/-/E-PRE9745> ; Cited in Passy, J. (2017). This is how many U.S. jobs robots will create over the next 10 years. Retrieved from <https://www.marketwatch.com/story/this-is-how-many-us-jobs-robots-and-automation-will-create-over-the-next-10-years-2017-04-04>

- Types of jobs created include robot monitoring professionals, data scientists, automation specialists, and content curators. Many new jobs will be in the fields of software, engineering, design, maintenance, support and training. Other future jobs include avatar designers, synthetic acting casting agents, roboticists, fluid interface engineers and programmable surface designers.
- There are several main AI technologies that advancing and may change business and business operationsⁱ. These include: natural language generation, speech recognition, virtual agents, machine learning platforms, AI optimized hardware, deep learning platforms, semantic technology, biometrics, image and video analysis, and robotic process automation. These technologies may replace positions or they may supplement tasks within positions. Press, G. (2017 January). Top 10 Hot Artificial Intelligence (AI) Technologies. Retrieved from <https://www.forbes.com/sites/gilpress/2017/01/23/top-10-hot-artificial-intelligence-ai-technologies/#3118410d1928>
- There are many projections about the future of work evolving through robots and humans working together across various sectors. For example, established and traditional jobs may need additional skills to monitor the interactions between humans and robots, such as newly specialized lawyers and new human resources positions to guide staff as robots enter the workplace.
- It is projected that by 2020, 20% of businesses will have workers that monitor and guide neural networks. Gartner. (2017). The Disruptive Power of Artificial Intelligence. Retrieved from <https://www.gartner.com/smarterwithgartner/the-disruptive-power-of-artificial-intelligence/>
- The CEO of IBM asserts that ultimately AI will create jobs- including programmers, developers, and jobs that manage the relationship between AI and humans. Business Insider Intelligence. (2017). IBM CEO says AI and automation will create jobs. Retrieved from <http://www.businessinsider.com/ibm-ceo-says-ai-and-automation-will-create-jobs-2017-1>

ii Abundance Advances

Technological advancements that could become widely used in the 2020s could lower the cost of living and can support equity and sustainability along with increasing self-sufficiency and helping families and communities meet some of their basic needs. These include technologies for low cost energy and storage, food production, and 3D printing of home goods, electronics, and even homes. We label ‘abundance advances’.

Energy Abundance

A variety of advances in energy production and storage are likely to lower the cost of this basic item. This includes solar, hydrogen, nuclear and even fusion energy. An important aspect of low cost energy is the potential to transform lives of low-income communities.

Low Cost Solar Energy

Low cost solar energy production and storage is likely in the 2020s. New solar cell technologies for low cost production include nantennas, kerovskite and perovskite materials that will likely provide highly effective solar cells.

Perovskite cells are an efficient photovoltaic technology that have the potential to be produced at low cost.

Hybrid perovskite cells may double the efficiency of solar cells, and ultimately lower cost.

Purdue University. (2017). Crystalline material could replace silicon to double efficiency of solar cells. Retrieved from <https://www.purdue.edu/newsroom/releases/2017/Q2/crystalline-material-could-replace-silicon-to-double-efficiency-of-solar-cells.html>

Perovskite cells for solar energy are being created at the fastest pace in solar energy history. As reported in Solar Magazine, the cells must achieve increased durability and scalability of production to be a widespread use but do hold great potential.

Burger, A. (2018). Industrial Chimera or Evolutionary Leap: Perovskite Solar Cells and Cheap, Ubiquitous Solar Energy. *Solar Magazine*. Retrieved from <https://solarmagazine.com/perovskite-solar-cells-commercialization/>

See also: National Renewable Energy Laboratory. (2018). Perovskite Solar Cells. Retrieved from <https://www.nrel.gov/pv/perovskite-solar-cells.html>

Other advances include a solar cell designed to be full spectrum with the ability to capture nearly all of the solar spectrum.

George Washington University. Scientists design solar cell that captures nearly all energy of solar spectrum. (2017). *Tech Xplore*. Retrieved from <https://techxplore.com/news/2017-07-scientists-solar-cell-captures-energy.html>

Installation and Storage costs for solar are decreasing and are projected to continue to become less expensive.

Solar and energy storage costs have been declining and are likely to continue to fall. "These declines reflect innovation and benefits from mass production and are welcome signs on the road to greater adoption of renewable energy for electricity" according to J.P. Morgan Chase & Co. (2017). Annual Energy Paper. Retrieved from <https://www.jpmorgan.com/jpmpdf/1320736484665.pdf>

As solar energy advances, costs will drop. As reported by the Solar Energy Industry Association (SEIA), from 2010-2017, the cost to install solar energy declined by 70% while solar grew in terms of installation and share of energy capacity across the United States. Labor costs, permitting and installation fees and supply chain costs related to solar likewise declined. SEIA. (2018). Solar Industry Research Data: Solar Industry Growing at a Record Pace. Retrieved from <https://www.seia.org/solar-industry-research-data>

As projected by Green Tech Media, prices of solar are projected to continue to decline at the rate of 4.4% for a 27% reduction by 2022. Wesoff, E., & Lacey, S. (2017). Solar Costs are Hitting Jaw-Dropping Lows in Every Region of the World. Retrieved from <https://www.greentechmedia.com/articles/read/solar-costs-are-hitting-jaw-dropping-lows-in-every-region-of-the-world>

Storage prices are dropping much faster than anyone expected, due to the growing market for consumer electronics and demand for electric vehicles (EVs). Major players in Asia, Europe, and the United States are all scaling up lithium-ion manufacturing to serve EV and other power applications. No surprise, then, that battery pack costs are down to less than \$230 per kilowatt-hour in 2016, compared with almost \$1,000 per kilowatt-hour in 2010. McKinsey research has found that storage is already economical for many commercial customers to reduce their peak consumption levels. At today's lower prices, storage is starting to play a broader role in energy markets, moving from niche uses such as grid balancing to broader ones such as replacing conventional power generators for reliability, providing power-quality services, and supporting renewables integration. David Frankel and Amy Wagner, Battery storage: The next disruptive technology in the power sector, McKinsey & Company. Retrieved from:

<https://www.mckinsey.com/business-functions/sustainability-and-resource-productivity/our-insights/battery-storage-the-next-disruptive-technology-in-the-power-sector>

Fuel Cell, Nuclear, and Other Energy Forms

Other forms of sustainable energy may develop, such as small scale fusion and fuel cells that produces low cost energy may become available.

Nuclear fusion power has the potential to produce nearly four times the energy as nuclear fission with very low carbon emission and could provide accessible, clean energy. Tokamak Energy's ST40, was successful in 2017 in achieving first steps toward fusion energy. Developers hope to have a successful power generator by 2025 and be delivering fusion energy to the grid (in the UK) by 2030.

Lant, K. (2017, May 18). Mini Reactors Could Make Affordable Fusion Power a Reality by 2030. Retrieved from <https://futurism.com/mini-reactors-could-make-affordable-fusion-power-a-reality-by-2030/>.

Small scale fusion, a low-cost form of energy production in which atomic nuclei release energy, capable of powering a small town using a unit the size of a flatbed truck. See 21st Century Tech. (2016). Fusion Reactors Two Steps Closer to Reality. Retrieved from <http://www.21stcentech.com/fusion-reactor-step-closer-reality>

Small scale nuclear (fission) power stations are being proposed and in 2018 one developer argued they would be online in 8 years – by 2026. The company, NuScale, is aiming for commercial operations in 2026 for a plant in Utah comprised of a dozen 50-megawatt reactors. Retrieved from Polson, J. (2018, April 10). First Small-Scale Nuclear Reactor May Be Just Eight Years Away. Available at <https://www.bloomberg.com/news/articles/2018-04-10/first-small-scale-nuclear-reactor-may-be-just-eight-years-away>

Hydrogen fuel cells have been proposed as a clean source of energy. Though it has been costly to develop the feedstock for hydrogen, recent research published in the Journal of Catalysis has found that ammonia can be used to stimulate hydrogen fuel. Cited in Robitzki, D. (2018, April 30). Cheap Hydrogen Fuel Was a Failed Promise – But its Time May Have Arrived. Retrieved from <https://futurism.com/ammonia-hydrogen-fuel>

According to an article published on Energy Central, fuel cell technology will change daily lives in five ways. These are: cleaner vehicles with less or no carbon emission, more reliable power for homes and buildings, enhancing mobile phone charge and design, incorporation into fossil fuel design to bridge the gap with renewables, and freedom from the grid towards independent and individual energy production. Hughes, J. (2016, February 15). Top 5 Ways That Fuel Cells Will Impact the Way We Live in the Future. Retrieved from <https://www.energycentral.com/c/iu/top-5-ways-fuel-cells-will-impact-way-we-live-future>

3D Printing

3D printing for distributing and manufacturing of goods may disrupt global supply chains and allow local and customized production of goods, often using sustainable and upcycled materials. 3D printing has the potential to impact the lives of low income communities, including through 3D printing of home goods and even whole homes, transportation aids and vehicles, and prosthetics. Communities can become empowered through low cost 3D printing, and as 3D printers become more affordable they can be shared and accessed in libraries, community centers or the equivalent of Kinkos stores. Housing for low income can also be transformed by 3D printing.

3D printing can help alleviate poverty in several ways argues Ashley Morefield in Borgen Magazine. 3D printing can lower the cost weather stations from \$10,000 to \$200, enabling communities in developing countries to get weather stations and better anticipate severe weather; a company called Liquidity Nanotech uses electrospinning 3D printing to create water filters that remove impurities and block microbes; the Victoria Hand Project uses 3D printers to create upper-limb prosthetics and works with health care providers to make these available in developing countries; a Chinese company called WinSun Decoration Design Engineering constructed 10 single story homes in 24 hours at a cost of \$5,000 each; transport vehicles, starting with mountain bikes have been 3D printed. A Harvard Business Review argued that “with five years (of 2015), one can expect to see fully automated, large-quantity manufacturing systems that are extremely economical”

Morefield, A. (2016, October 14). Borgen Magazine, Five Ways 3D Printing Can Help Alleviate Poverty. Retrieved from <http://www.borgenmagazine.com/3d-printing-alleviate-poverty/>

3D printing of homes and multiunit buildings has already begun. For example, San Francisco based company Apis Cor built an entire small 400 square foot home through 3D printing in 24 hours. However, workers completed touches such as painting and some manual installation.

Moon, M. (2017). A San Francisco startup 3D printed a whole house in 24 hours. Retrieved from <https://www.engadget.com/2017/03/07/apis-cor-3d-printed-house>

3D printed homes are also being manufactured at an economical price. Texas based company ICON in cooperation with New Story created a 650-square foot 3D printed home that costs \$10,000; took 24 hours to complete; and meets the building codes of the City of Austin where it was built. New Story intends to build these in developing countries for a cost of \$4,000.

Resinger, D. (2018, March 12). *This Company will 3D Print a House for \$10,000*. Retrieved from <http://fortune.com/2018/03/12/sxsw-2018-3d-print-home-icon/>

Food Abundance

Food insecurity and inability to access healthy foods are common problems for many low-income communities across the nation. This may be challenged further with environmental and economic changes; however, there are technologies that may empower communities to increase self and shared sufficiency and produce nutritious, affordable food.

While conventional agriculture is being challenged by climate change – particularly drought, higher temperatures – but also floods and fires, in-community and in-home food production is growing, both conventional gardening and more high-tech forms such as hydroponics and aeroponics. In addition, 3D printing and cultured meat could change food patterns.

Advances in food production include aeroponics and hydroponics (growing plants in an air, mist or water environment) to produce nutritious food in large amounts quickly and sustainably. This can be done in urban environments using vertical farms and other techniques. Vertical farming, which grows food usually with hydroponic or aeroponics methods in stacked layers, offers a more sustainable year-round crop production with high yields and climate resiliency. There are employment opportunities including with engineers and workers in maintenance. Then, as automation increases, new jobs will include system analysis and software development positions.

Benke, K. & Tomkins, B. (2017). Future food production systems: vertical farming and controlled-environment agriculture. *Sustainability: Science, Practice and Policy*, 13, 13-26.

David Rosenburg, CEO of AeroFarms (see more: <http://aerofarms.com/>) is quoted as explaining vertical farming can grow produce in around half the length of time observed in a field, using 95% less water, around 50% less fertilizer, and no herbicides, fungicides, pesticides.

Brennan, M. & Gralnick, J. (2015). Vertical farming: The Next Big Thing for Food- and Tech. Retrieved from <https://www.cnn.com/2015/06/24/vertical-farming-the-next-big-thing-for-food-and-tech.html>

Another area of food abundance is cultured meat, which is progressing in taste and affordability and may become a major sustainable and accessible source of producing protein.

When lab grown burgers first emerged, they were extremely expensive – and not particularly tasty. In 2013, Mosa Meat produced a cell-cultured beef burger which took months to produce and would have cost \$1.2 million per pound to sell. But, in four years, the price has fallen dramatically. In four years, the price of lab-grown “meat” has fallen by 99% and there’s still a long way to go.

Purdy, C. (2017, June 5). There’s still a long way to go. Retrieved from <https://qz.com/997565/in-four-years-the-price-of-lab-grown-meat-has-fallen-by-96-theres-still-a-long-way-to-go/>

Mosa Meat can currently produce meat that costs \$27 to \$45 per pound, and they will enter the market with a premium priced product in five years (thus, around 2021) and that in another five years (around 2026) the prices will be competitive to what people currently pay for beef. The lower competitive price, combined with a convincingly real taste and sensation, and environmental and animal rights motivations, may allow for widespread production and consumption of cultured meat.

Burningham, G. (2016, February 28). Lab-Grown Beef Will Save the Planet- And Be a Billion Dollar Industry. Retrieved from <http://www.newsweek.com/2016/03/11/lab-grown-beef-will-save-planet-and-be-billion-dollar-business-430980.html>

Several other companies, including Impossible Foods (see more: <https://www.impossiblefoods.com/>), are producing fully plant-based meats and cheeses. In 2017 the chain Clover Food Lab began selling Impossible Food’s meatballs in a sandwich or platter in its stores. Retrieved from <https://www.cloverfoodlab.com/locations/location/?l=cloverhsq>

In 2017 the Futurist Thomas Frey in a review of the emerging sector and the companies involved, forecast that “by 2025 industrial grown meats will become the world’s cheapest food stocks”. The Coming Meat Wars (2017). Retrieved from <https://www.futuristspeaker.com/job-opportunities/the-coming-meat-wars-17-mind-blowing-predictions/>

Some advocates of cultured meat argue for it as a way to get beyond animal agriculture and its harmful impacts on the environment – contributing to as much as 19% of greenhouse gases. And some are calling it the “clean meat” industry.

The cattle and beef industry is objecting to the terms cultured meat or clean meat and pressing for regulation to prevent the use of the term “meat”. The succeeded in having the state of Missouri where a bill passed with bi-partisan support that says that only products that are derived from harvested production livestock or poultry (which died by slaughter) can be called meat. From Haridy, R. (2018, May 20). Lab-grown meat not meat according to state of Missouri. New Atlas. Retrieved from <https://newatlas.com/lab-grown-meat-classification-bill-missouri/54687/>

There will be issues of nutrients, micronutrients, and other issues to be dealt with, but if Thomas Frey’s forecast above is correct, cultured meat could be a major food by the late 2020s.

More Abundance

For a more extensive look of abundance, some entrepreneurs project that technology will advance incredibly rapidly in the upcoming two decades and enable the basic needs of water, food, energy, health and education to be met for every person on the planet. Peter Diamandis published his book in 2012: See: Diamandis, P., & Kotler, S. (2012). *Abundance: The Future is Better Than You Think*. New York: Free Press. And has an ongoing monitoring of developments that he and his colleagues report in their weekly “Abundance Insider” blog. <https://www.diamandis.com/blog/topic/abundance-insider>

And nanotechnology expert K. Eric Drexler, argues that in the 2030s the full flowering of nanotechnology will allow us to do nano-manufacturing of most of our needs at relatively low costs – hence the title of his book: *Radical Abundance*. For example:

- Molecular biology and chemistry will enable many of the items we use daily to be built with atomic precision.
- Transportation, construction, manufacturing, water and food production will become easier to do and so more accessible and beneficial to more people globally.

See: Drexler, K. Eric. (2013). *Radical abundance*. New York: PublicAffairs.

iii Developing low and very-low income housing options

Housing remains a major human need. Housing insecurity brings a series of other needs. Communities around the country are and will use a variety of approaches to increase the stock of low and very low income housing, including:

- Rezoning to allow secondary living units, typically called Accessory Dwelling Units, attached to or in the yards of existing homes.
- Allowing a higher number of unrelated individuals to live in the same house;
- Encouraging sustainable, energy efficient, low cost construction of new units;
- Fostering neighborhood parking and driving regulations to calm traffic from increased residents;
- Taxing unoccupied homes;
- Prohibiting or taxing AirBnb and related uses of rental properties or taxing that use to provide a fund to make other properties available;
- Require or incentivize landlords to accept housing vouchers;
- In addition to federally funded vouchers create state or locally funded vouchers;
 - This serves to help alleviate concentrations of poverty by giving voucher holders more options of where to live.
- Tax construction profits to add to the funds for low income housing development;
- When low cost solar and other sustainable energy production and storage becomes available, require or incentivize landlords to install this and pass the savings on to renters;

- Or enable, through loans from utilities or others, to install this equipment; paying the loans off with the energy savings.
- Adjust regulation to support fast construction of safe, sustainable and energy efficient new developments that include very low-income housing;
- Support and encourage alternative construction, including 3D printing of housing components and repurposed materials, using modular and “tiny homes”;
 - Use of local 3D printing of home parts with quick on-site assembly will be available in many communities in the 2020s (see discussion above of developments in 3D home printing).
- Following Los Angeles’ lead, providing cash grants to home owners to build secondary units and agree to rent the units to formerly homeless individuals. Retrieved from <https://la.curbed.com/2017/8/16/16157282/los-angeles-homeless-housing-accessory-dwelling-granny-flat>
- As the city of Denver demonstrated, where some high-end apartments are vacant, subsidize low to middle income renters moved into the units. (Schiller, B. (2018). Denver’s Solution to Its Housing Crisis: Subsidize Rent for Expensive, Empty Apartments. Retrieved from <https://www.fastcompany.com/40515202/denvers-solution-to-its-housing-crisis-subsidize-rent-for-expensive-empty-apartments>).
- Use various combinations of these approaches to deconcentrate poverty.

iviv [The Guaranteed Basic Income](#)

The guaranteed basic income (GBI), also called the Universal Basic Income, the Negative Income Tax, the Citizen’s Income, and the Basic Income Guarantee has been proposed by conservatives and liberals in the U.S. for decades. Richard Nixon proposed the Negative Income Tax.

Support by liberals and conservatives offered different rationales. For example, some conservatives favor reduced government spending, eliminating duplicative programs and staff, through an effective way to reduce poverty. Gordon, N. (2014, August 6). The Conservative Case for a Guaranteed Basic Income. Retrieved from <https://www.theatlantic.com/politics/archive/2014/08/why-arent-reformicons-pushing-a-guaranteed-basic-income/375600/> .

Leading conservative Charles Murray supports basic income to help keep the United States competitive during labor market transformation to robotics and replace the current welfare program. Murray, C. (2016, June 3). A Guaranteed Income for Every American. Retrieved from: <https://www.wsj.com/articles/a-guaranteed-income-for-every-american-1464969586>

Basic income is presented as a way to make welfare programs more impactful, challenge ideas of safety nets, adapt to technological change and evolve the relationship between work, income and identity. Flowers, A. (2016, April 25). What Would Happen If We Just Gave People Money? Retrieved from <http://fivethirtyeight.com/features/universal-basic-income>

Basic income experiments have taken place across the world. In Canada and Namibia, both of their GBI experiments saw a reduction in poverty and other positive impacts. The Canadian province Manitoba piloted basic, minimum income- referred to as “mincome”- in the mid-1970s. Although the program was removed after a few years, it yielded positive results including higher rates of remaining in school, lower rates of hospitalization, and hardly a change in work rates. The amount of money recipients received was determined by need. See Surowiecki, J. (2016). Money For All. *The New Yorker*. Retrieved from <https://www.newyorker.com/magazine/2016/06/20/why-dont-we-have-universal-basic-income> and Lum, Z. (2014). A Canadian City Once Eliminated Poverty And Nearly Everyone Forgot. *The Huffington Post*. Retrieved from https://www.huffingtonpost.ca/2014/12/23/mincome-in-dauphin-manitoba_n_6335682.html

Announced with significant world attention, Finland is piloting a two-year basic income program. Henley, J. (2017). Finland trials basic income for unemployed. Retrieved from <https://www.theguardian.com/world/2017/jan/03/finland-trials-basic-income-for-unemployed>. A change in political sentiment has led to a decision not to expand or renew the project but let it expire in January of 2019 and instead use other approaches to deal with payments for low income individuals. Henley, J. (2018) Finland to end basic income trial after two years. Retrieved from <https://www.theguardian.com/world/2018/apr/23/finland-to-end-basic-income-trial-after-two-years>

A major GBI effort has been launched in Kenya:

The US charity GiveDirectly (see more: <https://www.givedirectly.org/>) has officially launched its trial of basic income in rural Kenya and is now enrolling experimental participants. The US \$30 million experiment will be the largest trial of basic income to date, in terms of both size and duration. All residents of about 120 rural Kenyan villages, comprising more than 16,000 people in total, will receive some type of unconditional cash transfers during the experiment. Some of these villages, moreover, will receive the universal basic income for twelve years. It is also unique among current experiments in that it is designed as a randomized controlled trial in which the experimental units are *villages* rather than individuals. This means that, unlike the studies occurring in Finland, Ontario, the Netherlands, and elsewhere, the GiveDirectly experiment will be able to capture community-level effects of the basic income.

McFarland, K. (2017, November). US/Kenya: GiveDirectly Officially Launches UBI Experiment. Retrieved from <https://basicincome.org/news/2017/11/uskenya-givedirectly-officially-launches-ubi-experiment/>

Another basic income program has been proposed by India's chief economic adviser:

India launched a small UBI pilot in the state of Madhya Pradesh in 2010. Then, in November of 2016 Arvind Subramanian, the Indian Government's chief economic adviser submitted his annual economic survey which included a proposal for a UBI that would give recipients 7620 rupees (\$113) a year. "Equivalent to less than a month's pay at the minimum wage in a city, it is well short of what anyone might need to lead a life of leisure. But it would cut absolute poverty from 22% to less than 0.5%" as quoted in The Economist (2017, February 4). India floats the idea of a universal basic income. Retrieved from <https://www.economist.com/finance-and-economics/2017/02/04/india-floats-the-idea-of-a-universal-basic-income>

In July of 2017 talks were held to determine whether such an initiative could be brought to fruition in India, but opinion is still divided. It is thought that a state-by-state strategy would be more viable, given India's population of 1.3 billion. Jones, B. (2018, January 31). We Could See an Indian Universal Basic Income by 2020. Retrieved from: <https://futurism.com/we-could-see-indian-universal-basic-income-2020/>

In January of 2018, Subramanian made a forecast: "I can bet... within the next two years, at least one or two states will implement UBI." Times of India. (2018, January 29). 1 or 2 states may roll out universal income in two yrs: CEA. Retrieved from: <https://timesofindia.indiatimes.com/business/india-business/1-or-2-states-may-roll-out-universal-income-in-two-yrs-cea/articleshow/62696341.cms?from=mdr>

Basic income is gaining attention and policy action in the United States.

Hawaii has become the first state to pass a bill in its State Legislature to study a universal basic income, (UBI) bill HRC89. Hawaii has experienced job declines in their agricultural sector and service jobs being automated. The bill sets up a working group to explore options for a state UBI, involving members from State House and Senate, director of human services, Chamber of Commerce and University of Hawaii's Economic Research Organization. This group will develop policy recommendations. Matthews, D. (2017, June 15). Hawaii is considering creating a universal basic income. Retrieved from <https://www.vox.com/policy-and-politics/2017/6/15/15806870/hawaii->

universal-basic-income and Business Insider. (2017). Hawaii just became the first U.S. state to pass a bill supporting basic income. Retrieved from <http://www.businessinsider.com/hawaii-basic-income-bill-2017-6>

In an effort to boost the economy and support families in poverty, Stockton, California is piloting a basic income program, and will provide participants \$500 each month. The Stockton experiment aims to collect data on how the unconditional money can impact the economic, health and wellbeing aspects of low-income families.

Langone A. (2018, April). Why This 27-year-old Mayor is Giving His City's Poorest Residents \$500 a Month- No Strings Attached. Retrieved from <http://time.com/money/5243564/why-this-27-year-old-mayor-is-giving-his-citys-poorest-residents-500-a-month-no-strings-attached/>

Generally, there has been growing support for basic income in recent years as the forecasts for job loss to automation have grown. The projections for total job loss by roughly 2030 in the United States range from: 47% (Frey and Osborne), 38% (Price Waterhouse Cooper), to 9% (OECD). These are referenced in the "Job Loss to Automation" End Note, above.

Financing a Basic Income

While there are a range of levels that the GBI has been proposed e.g. \$10,000 yearly income plus \$3,000 for health insurance (Charles Murray), up to \$32,000 yearly in Switzerland. The level used in Scenario 3 is the \$12,000 yearly for adult citizens and \$4,000 per child proposed by Andrew Stern. See Stern, A. & Kravitz, L. (2016). *Raising The Floor: How A Universal Basic Income Can Renew Our Economy And Rebuild The American Dream*. 1st ed. New York: Public Affairs. Print.

That is \$12,000 and \$4,000 in 2015 dollars, in Scenario 3 we assume that these figures would be adjusted for inflation, and so would be higher when they begin in the 2020s, and they would grow with inflation after they are established.

Stern argues that the costs of a GBI would be roughly \$3 trillion yearly. An income of \$12,000 for every adult, would cost between \$1.75-\$2.5 trillion in federal funds each year. The \$4,000 for each person under 18 would add another \$296 billion. Stern's book proposed several ways to pay for the UBI. Below is a list of options for funding GBI from Stern and other proponents:

- Ending all or many of the current 126 welfare programs^{iv}, which cost \$700 billion in government and \$300 billion state government
 - Eliminating food stamps (save \$76 billion), housing assistance (\$49 bil.), and EITC (\$82 bil.)
- Adjusting long term retirement policy for future generations, but not changing Social Security for those who have already been contributing to the system
- Creating a new and more cost effect non-employer based healthcare system
- Some redirection of government spending and taxation
 - Raise revenue by eliminating all or some of the federal governments \$1.2 trillion in tax expenditures; do away with reductions such as investment expenses, preferential treatment of capital gains, foreign taxes, charitable contributions, mortgage interest, and accelerated depreciation.
 - Look at trimming expenditure on the federal budget, such as reducing military budget (current \$600 billion), farm subsidies (\$20 billion), or subsidies to oil and gas companies (\$30+ billion)
- Increased revenue from new sources
 - Consider a value added tax (VAT) of 5 to 10% on the consumption of goods and services, with all revenue funding basic income
- Implement a Financial Transaction Tax (FTT) (also known as the "Robin Hood Tax" and "Tobin Tax") a tax on financial transactions, such as a federal tax on stock sales
- Wealth tax, a levy on the total value of personal assets, including housing and real estate, cash, bank deposits, money funds, stocks, etc.
- Carbon Tax, which at a rate of \$15/ton of CO₂ would bring \$80 billion in annual revenue, or about \$250 per U.S. resident
- A "common goods tax" such as the one placed on oil to fund the Alaska Permanent Fund

^v Human Services Value Curve

In developing these scenarios, we looked for human service visions, or descriptions of their visionary states. One leading contender for the preferred future of the field is the Human Services Value Curve, developed by Harvard's Technology and Entrepreneurship Center's Leadership for a Networked World with the American Public Human Services Association (APHSA).

APHSA argues that the desired progression in value can best be described from the point of view of the consumer in this way:

- At the regulative level, consumers receive a specific product or service that is timely, accurate, efficient and easy to understand.
- At the collaborative level, consumers “walk through a single door” and have access to a complete array of products and services that are available “on the shelf.”
- At the integrative level, products and services are combined into packages, and designed and customized with input from the consumer themselves, delivered in the most convenient ways, with the objective of best meeting the consumer's true needs and driving positive outcomes.
- At the generative level, those providing products and services are joining forces to make the consumer's overall environment better for them, resulting in value that is broader and more systemic than an individual or family might receive

More information available:

http://www.aphsa.org/content/dam/aphsa/pdfs/Resources/Publications/TOOLKIT_Moving%20through%20the%20Value%20Curve%20Stages_.pdf

A group of local human service agency leaders within APHSA developed the “local vision” for the human services value curve in terms of what it would include, namely these core components:

- A resolute focus on a person-centered approach to casework and service delivery
- Testing and implementation of innovative evidence-based practices
- Partnering with other organizations and systems across sectors
- An integrated infrastructure, with information technology systems that enable and produce cross-system data; led first by the integrated health and human services information system.
- A workforce of “skilled tradespeople” able to build community well-being— with the competencies to deliver evidence-based practices
- Effective and efficient internal change management processes that enable leaders to continuously improve their organizations
- Accountability processes that clarify outcome measures and quantify impacts, including reduced health care costs, improved health, and greater self-sufficiency.

And these principles guiding human services:

- Solid prevention- and strengths-based orientation
- Two-generation and multi-generation approaches
- Holistic, person-centered, and customized service planning
- Both pre-trauma and trauma-informed strategies
- Sustained attention on fatherhood engagement
- Commitment to defining and tracking of a set of common indicators across all well-being and health domains.

See: A NEW PATHWAY TOWARD PROSPERITY AND WELL-BEING, *A Concept Paper by the National Council of Local Human Service Administrators, May 16, 2016*

Equity is a value that has been driving movements for social, political and economic changes in the US and globally that has been growing and becoming more refined in recent decades. It is accompanied by attitudes supporting inclusion and rejecting exclusion. This “equity rising” trend is forecast in Scenarios 3 and 4 of these Human Progress and Human Services 2035 Scenarios to play a significant part of the transformations of policies, local attitudes, and local development (e.g. the shift from “NIMBY” to “YIMBY” in increasing mixed income neighborhoods and neighborhood density).

Equity in this sense, means offering each person what they may need to succeed. This is different from equality, which promotes treating everyone the same. Equity acknowledges that not everyone is equally or fairly positioned in society, which relates to human and social services in understanding how to best distribute and redistribute resources.

Health equity is a component of equity and the public health community has usefully defined health equity as a “state in which every person has the opportunity to attain his or her full health potential and no one is disadvantaged from achieving this potential because of socioeconomic or environmental conditions. Source: HCPH Strategic Plan; Adapted from CDC, Promoting Health Equity. (2008). In Harris County Public Health, Health Equity Policy, Retrieved from <http://sites.bu.edu/nephtc/files/2017/11/Health-Equity-Policy.pdf>

Equity rising reflects society changing its mind about fairness and what is appropriate fairness. This happened with slavery, spanning decades in the 19th century and required a Civil War to accomplish. That was followed by Jim Crow laws, discrimination and lynchings. The Civil Rights Act of 1964 represented society’s mind change on discrimination. Other mind changes include voting rights for women, environmental protections, employment and pay equity, education. More recently the relative rapid protection of LGBTQ rights and gay marriage reflect on going changes of mind (and heart). In all of these cases, unfairness has certainly not totally disappeared. But discrimination and other offences are no longer legally acceptable. This equity rising reflects a maturing of thought on the components of opportunity – a recognition of social and economic determinants, including structural racism and exclusion. The growth of this awareness can be traced to many developments in the U.S. and globally. One manifestation of these mind changes are visions or statements of goals. Globally the major shared goals developed collectively by the nationals of the world are the Millennium Development Goals for 2015 and their successor Sustainable Development Goals (SDGs). These consciously include equity in calling for elimination of poverty and hunger; gender equality; reduced inequality; quality education, water and sanitation, peace and justice. See: <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>

In the health arena, the World Health Organization (WHO) in its 1998 restatement of the definition of “health for all” added the commitment to the ethical concepts of equity, solidarity and social justice and a gender perspective, while emphasizing the importance of reducing social and economic inequities in improving health of the whole population. World Health Organization. HEALTH21: An Introduction to the Health for All Policy Framework for the WHO European Region. European Health for All Series ; No. 5, page 4. Retrieved from https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0ahUKEwix5POkieDbAhUMna0KHSG4A7kQFggsMAA&url=http%3A%2F%2Fwww.euro.who.int%2F_data%2Fassets%2Fpdf_file%2F0004%2F109759%2FEHFA5-E.pdf&usq=AOvVaw2XulrSfKt5OeSy1FF-TSzy and www.euro.who.int/_data/assets/pdf_file/0004/109759/EHFA5-E.pdf

In the U.S., the growing focus on equity was illustrated in the Healthy People Objective for the Nation that set goals for the coming decade. In the late 1990s, the nation set its Healthy People 2010 Objectives for the Nation, including two overarching goals: “increase quality and years of healthy life” and “eliminate health disparities.” For 2020, these goals were amended to say, “achieve health equity, eliminate disparities, and improve the health of all groups.” The draft 2030 overarching goals include “eliminate health disparities, achieve health equity, and attain health literacy to improve the health and well-being of all.”

The CDC in the 2000s increased its focus on health equity and the social determinants of health. In state and local government equity and health equity offices were created in a large number of jurisdictions. And budgeting and policy making consciously adopted an “equity lens” for determining distribution of services that consider neighborhood disparities in income, infrastructure and other conditions. See more:

https://www.cdc.gov/nchs/healthy_people/hp2010.htm

Equity movements are emerging across the globe and the United States. Many of these movements have specific focuses on race or gender within the larger framework of equity. These are sometimes understood as social justice

movements, and are responses to oppression, injustice, inequity or driven by other cultural ideologies for progress.

Black Lives Matter is a national movement with many local chapters which utilized social media to leverage political advocacy promoting racial justice and action against violence inflicted upon African American communities. Black Lives Matter brought conversations around privilege and race-based violence and oppression into national areas, including political spheres. See more: <https://blacklivesmatter.com/about/herstory/>

The “Me Too” movement is a national movement which has gained momentum in supporting survivors of sexual assault and promoting the end of sexual violence. See more: <https://metoomvmt.org/> Movements for equal pay and equal treatment across genders have also gained national attention, as well as movements which support the rights of all people to be safe and respected in their gender orientation

The Dreamers Movement and United We Dream movements which support immigrant rights have had success in influencing national policy. See more: <https://unitedwedream.org/>

As with most of these major “mind changes” there are periodic reversals or counter trends. Currently those include increased minority and immigrant hostility, the rise of white nationalism, the election of President Trump and many of the policies of his administration. The forecast of “equity rising” argues that the support for equity, attention to policies and services that ensure opportunity to the excluded, and personal attitudes of inclusion will continue to grow, leading to support for the policy transformations and community inclusion featured in Scenarios 3 and 4.

Observations supporting Equity Rising

An aspect of mind change includes different and enhanced experiences and understandings of inequities. Recent years have seen growth in a range of such observations in health, wealth and income, and incarceration.

- Health inequality

As noted, local public health is focusing much more on health inequalities and achieving health equity. Measures comparing differences in life expectancy in counties identified a 20-year difference related to wealth, with the more affluent and better educated counties living longest. These differences have been increasing for the 34 years between 1980 and 2014. Stein, R. (2017, May 9). Life Expectancy Can Vary By 20 Years Depending on Where You Live. *NPR All Things Considered*. Retrieved from <https://www.npr.org/sections/health-shots/2017/05/08/527103885/life-expectancy-can-vary-by-20-years-depending-on-where-you-live>

The same is true for neighborhoods in many cities. The Center on Society and Health of Virginia Commonwealth University mapped this for 21 cities and notes that “life expectancy can differ by as much as 20 years in neighborhoods only about five miles apart from one another.” VCU Center on Society and Health. (2016, September). Mapping Life Expectancy. Available at <https://societyhealth.vcu.edu/work/the-projects/mapping-life-expectancy.html>

And there are similar divides in most nations, the U.S. is among the leaders in health disparities as measured by individual’s perceptions of their health and their income.

Hero, J., Zaslavsky, A., Blendon, R. (2017, June). The United States Leads Other Nations In Differences By Income in Perceptions of Health and Health Care. *Health Affairs*. 36(6). Retrieved from <https://www.healthaffairs.org/doi/abs/10.1377/hlthaff.2017.0006>

- Wealth and income disparity

There has been significant growth in income inequality and media coverage of it. Spotlight on Poverty reported on its survey of reporting in major news outlets from 2007 to 2016 and found that coverage of income inequality “increased substantially in the New York Times and Washington Post, and saw more modest increases in the other outlets (including USA Today, the Los Angeles Times, the New York Post, and the Chicago Tribune), save for the Wall Street Journal, where coverage remained stagnant”.

Spotlight Staff. (2017, October 24). Media Coverage of Low-Income Americans in a New Political Era. Retrieved from <https://spotlightonpoverty.org/spotlight-exclusives/media-coverage-low-income-americans-new-political-era/>

Specific examples of reporting include:

Wealth inequality is worsening in the United States. According to a 2017 article in the Washington Post “the richest 1 percent now owns more of the country’s wealth than at any time in the past 50 years.” Ingraham, C. (2017) The richest 1 percent now owns more of the country’s wealth than at any time in the past 50 years. Retrieved from https://www.washingtonpost.com/news/wonk/wp/2017/12/06/the-richest-1-percent-now-owns-more-of-the-countrys-wealth-than-at-any-time-in-the-past-50-years/?noredirect=on&utm_term=.c5d137c95748.

As with health disparities, wealth and income disparity are even more marked between racial groups in the United States. For example, for every \$100 in white family wealth, black families hold just \$5.04. Census Bureau’s Current Population Survey cited in The New York Times Badger, E. (2017). Whites Have Huge Wealth Edge Over Blacks (but Don’t Know It). Retrieved from

<https://www.nytimes.com/interactive/2017/09/18/upshot/black-white-wealth-gap-perceptions.html>

And higher than one in four black household have zero or negative net worth, in contrast to the less than one in ten white families without wealth or net worth. Jones, J. (2017). The Racial wealth gap: How African-Americans have been shortchanged out of the materials to build wealth. *Economic Policy Institute*. Retrieved from <https://www.epi.org/blog/the-racial-wealth-gap-how-african-americans-have-been-shortchanged-out-of-the-materials-to-build-wealth>

- Incarceration Rates

Criminal justice and incarceration rates in the United States are greatly uneven across racial lines. While the United States has very high incarceration rates compared to other developed nations, there is also a stark difference of incarceration rates across white, Black and Hispanic populations. Hispanics and African Americans make up around 32% of the US population but comprised 56% of all incarcerated people in 2015. And while African Americans and whites use drugs at similar rates, the imprisonment rate for African Americans for drug charges is nearly 6 times that of whites. NAACP. Criminal Justice Fact Sheet. Retrieved from <http://www.naacp.org/criminal-justice-fact-sheet/>