What if we designed housing and retrofitted intersections for:
- The Loneliness Epidemic p.6
- Autonomous Vehicles p.29
- Climate Change p.48
- The Shrinking Middle Class p.78

What if we started at the intersection of By Pass Road and Jackson Highway where Covington, GA meets Newtown County?

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What if we started at the intersection of By Pass Road and Jackson Highway where Covington, GA meets Newtown County?

RETROFITTING SUBURBIA'S MISSING MIDDLE

Professor Ellen Dunham-Jones
Georgia Institute of Technology

Aditi Bharadwaj
George Doyle IV
Wanli Gao
Joel Jassu
Emily Khalid
Eleni Kroi
Shreya Kumar
Josh Macbeth
Jun Wang
This is a view of the intersection of By Pass Road and Jackson Highway in Covington, GA. But it could be anywhere. What if it was retrofitted with affordable, missing-middle scale, intergenerational housing to address climate change, the loneliness epidemic, the shrinking middle class and aging population, and the prospect of autonomous vehicles?

These were the questions posed to Georgia Tech grad students in Arch 7012/6072 for a 7-week hypothetical urban design studio project, in the spring of 2020.
Missing Middle Housing is a transformative concept that highlights the need for diverse, affordable housing choices in sustainable, walkable places.

Missing Middle Housing types:
- Expand housing choices for smaller and aging households while providing opportunities for homeowners to generate income from an attached or detached rental unit.
- Fit into neighborhoods of detached single-family dwelling units with gentle transitions in scale.
- Provide shared lawns, patios, and courtyards that enable more social interaction and reduced costs.

Source: www.opticos.com
Covington, GA

- 35 miles east of Atlanta
- Newton County Seat

Fear of sprawl coming along I-20 from Atlanta in the late 1990’s fostered interest in preservation of the historic town square and new urbanist planning.

Clarks Grove has proven the market for new urbanism, including this cottage court below.
Covington GA Today

- Revitalized historic downtown square
- Slow-growing population of 13,728
- Approximately ½ black/white population
- 32% obese
- 30% poverty rate
- 41% home ownership
- Median hh income: $40k
- Industrial jobs dominate and are growing
- No transit. 2 cars/household

For more details and sources, see the Appendix.
What if we designed housing and retrofitted intersections for...

THE LONELINESS EPIDEMIC

Covington's Intergenerational Village

ADITI BHARADWAJ | EMILY KHALID | ELENI KROI
What if the Loneliness Epidemic was the driver of our design?

In 2017, the former U.S. Surgeon General declared that our country was heading into a loneliness epidemic.¹ Loneliness is often a consequence of social isolation and sparse human connection. Its rise can be attributed to shrinking social circles, lack of mobility, and limited accessible activities. Its long-term effect on health can be as damaging as smoking 15 cigarettes a day, and can severely threaten longevity.² Honing in on who specifically experiences loneliness, the trend peaks in adolescence and young adulthood, declines through middle age, and rises again in old age.³ Is loneliness widespread in Covington and similar rural counties across the country?

Twenty-eight percent of Covington’s population self-report themselves to show little interest or pleasure in doing things, twenty-eight percent feel down, depressed, or hopeless, and five percent are experiencing suicidal thoughts.⁴ The two age groups that are highest afflicted, teenagers and the elderly, also happen to be very underserved in the Covington community. Local teenagers lack spaces to gather other than a singular YMCA, and existing senior housing is at capacity with an ever-growing waitlist. Furthermore, Bypass Road and Jackson Highway are busy roads that limit walkable interaction between a string of local middle schools, high schools, and 55+ communities.

Our solution caters to and integrates teenagers and seniors, seemingly on opposite ends of the spectrum but equally dis-served by auto-dependent urbanism. Instead, we propose a lively Intergenerational Village which is anchored by a pedestrian-only walking + biking loop that connects to proposed local trails as well as area schools. The loop integrates a variety of recreational spaces for teens, civic gathering spaces, and other everyday uses with senior and missing middle scale housing. We incorporate elements of small-scale walkable urbanism to foster social interaction throughout. Smaller communal spaces are shared by different intergenerational housing types, while the larger town green is lined with community-oriented uses and is programmed to cater to different age groups. Such elements are expected to reduce the loneliness factor for both demographics.⁵

Our goal is to provide opportunities for social engagement through our design. Be it through seniors feeling less alone while overlooking a movie night on the lawn, or the opportunity for teenagers to easily walk to their favorite frozen yogurt place from their high school. As our Intergenerational Village develops, we hope that it not only transforms the existing intersection into a thriving community, but also connects with larger trail networks and surrounding neighborhoods.

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Loneliness acts in a nonlinear U-shaped curve—where it peaks in adolescence, dips down in mid-life, and then peaks again in later life. Thus, it can target two specific age groups—teenagers and seniors.

**Teens**
- Teens spending more time on digital devices and gaming leads them to avoid in-person interaction.¹
- Teens are still forming a sense of identity, which comes with insecurity and self-doubt, leading to self-isolation.²
- Teens take loss particularly hard, i.e., a breakup, loss of a job, or leaving a community like a school or neighborhood.²

**Seniors**
- Shrinking social circles. Friends, significant others, and family members may move away or pass away.³
- Difficult to meet with in person due to changes in mobility, i.e., when senior stops driving for safety reasons.⁴
- Age-related health conditions, such as hearing loss and eye diseases, can make it difficult to communicate.⁴

While teenagers and seniors are seemingly on opposite ends of the spectrum, their needs regarding characteristics of a successful space overlap significantly. While they definitely do have their own unique interests that pertain specifically to their age group, such as after school spaces to do homework for teenagers or nearby health amenities for seniors, a majority of needs are shared by both.

To begin, mobility and accessibility are both important factors for teenagers and seniors alike. Teenagers are often limited in mobility due to not having a license or relying on a schedule of a driving parent, therefore driving distance locations are often not accessible to them. For seniors, because they either limit or stop driving due to safety reasons, they also can not always access places that require driving. Both age group also seek a sense of ownership because it allows them to make a space truly their own, as well as give them a reason to up keep it. For teens, this may be curating a weekly art gallery or mural wall. For seniors, this may be expressing themselves through individual window box planters hanging from their home. Next, both age groups can benefit from access to public green space because it can benefit health, wellbeing and social connection among peers.¹ Ultimately, teens and seniors are looking for a community that fosters a sense of belonging and opportunities to engage with others. This can be done through both candid encounters, such as running into an acquaintance at a store, or planned activities, such as attending a weekly book club at a cafe.


**Teen Needs**
- After school hang out spaces
- Recreational Spaces
- Social activities

**Senior Needs**
- Affordable housing
- Continuing Care
- Health Amenities
- Continued learning opportunities
The Problem | How is the Loneliness Epidemic evident in Covington?

28% of population 18 years old and older usually have little interest or pleasure in doing things.

<table>
<thead>
<tr>
<th>Region</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Covington</td>
<td>28.2%</td>
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<tr>
<td>Newton County</td>
<td>27.0%</td>
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<td>Georgia</td>
<td>26.5%</td>
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28% of population often feel down, depressed, or hopeless.

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<tr>
<td>Georgia</td>
<td>26.9%</td>
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5% of population have suicidal thoughts.

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<thead>
<tr>
<th>Region</th>
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<tr>
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<td>26.9%</td>
</tr>
</tbody>
</table>

Existing Conditions

at Intersection of Bypass Road and Jackson Highway

Not walkable
Not accessible
No local businesses
No places to linger
Not healthy

The car centric intersection has disconnected strips of sidewalk discouraging walkability. It also lacks a diversity of businesses and engaging outdoor spaces that encourage people to stay.

Site Analysis

Proximity to Schools, Parks, and Neighborhoods

- 3 schools within walking distance, 2 schools within short drive
- Several residential neighborhoods within walking distance
- Lack of public parks within walking distance to the site

Above: Our intent is to attract and create amenities for neighboring schools and residential clusters within a close proximity of the site. We also want to provide additional green space in our site due to the lack of public parks within walking distance to locals.

Proposed Connections to Existing Trail Network

- Expand the walkable network to surround existing schools
- Connect to Covington Central Park (under construction)
- Propose a new trail alongside Dried Indian Creek

Above: Our intent is to attract and create amenities for neighboring schools and residential clusters within a close proximity of the site. We also want to provide additional green space in our site due to the lack of public parks within walking distance to locals.

www.city-data.com/health-nutrition/Covington-Georgia.html
• Intergenerational Village will be anchored by a pedestrian-only walking + biking loop that connects to proposed local trails as well as area schools.

• The loop integrates a variety of recreational spaces for teens, civic gathering spaces, and other everyday uses with senior and missing middle scale housing.

• By creating a pedestrian loop around the intersection, it produces a new way of physically and socially connecting all four quadrants that is accessible to pedestrians.
• The circulation prioritizes the loop and has the vehicle streets be secondary.

• By having the pedestrian crossing be before the intersection, it will slow down cars and give right of way to the pedestrians.

• Add shuttle buses on By Pass Rd. and Jackson Highway to allow mobility to those who do not have access.

• Connect existing trails and neighborhoods to the Loop
• Journey through a variety of experiences and activities while meandering through the Village.

• By incorporating and having all the storefronts face the loop in all four quadrants, it will further enhance the loop and stimulate the sense throughout.

• Different activities and event are planned throughout the year.

ACTIVITIES AT THE VILLAGE ALL YEAR ROUND

LEGEND
- Loop
- Added Green Space
- Major Road
- Pick up + Drop off
- Commercial + Retail
- Live + Work
- Nursing/Pharmacy
- Affordable Housing
- Senior Housing
- Recreation
- Public Art
Providing a shaded walkway to increase activation along the lawn with small-scale daily activities

Building a sense of owning the community by allowing the public to paint murals on the loop and facilitate activities

Creating human scaled streets alleys between housing to make them interesting and charming
The Solution | Activating the Loop

Retrofitting the gas station to a diner for the seniors alongside a skate park for teens.

Outdoor programs at the lawn achieves maximum accessibility for multi-ethnic teens and seniors.

A bright and safe alley system for exploration of activities and is more comfortable for pedestrians.
I. Five Year Plan I Establish the Loop, complete the first phase of residential cottages and townhouses, create the Village Green and Civic Center.

II. Complete Quadrant I Demolish the CVS and McDonald’s and replace them with a Nursing Corner and a Movie Theater.

III & IV. Scenic Path & Retrofit the Gas Station I Continue the Loop and incorporate the existing creek and gas station to be provide more variety, gathering spaces, and more residential.

IV. Develop all Four Quadrants

V. 30 Year Plan I Complete the Loop and demolish the bank to provide an E-Sports Center for video gaming. Also begin setting the future development footprints to reflect the four quadrants.
Regulatory Plan

The existing parcel lines determined the future blocks, streets, and Loop. The building fronts either face the intersection or the loop with their backs and sides to streets and alleys. The Regulatory Plan demonstrates that most of the space will be of public use with the private lots being around the border of the site to maximize their privacy from the intersection.
In the 30 year vision, the Intergenerational Village has transformed all 4 quadrants surrounding the intersection into a walkable, engaging destination for people of all ages. The Pedestrian Loop has also been completed, allowing people to explore the entirety of the Village by foot, bike, or golf cart. There has also been a substantial amount of Missing-Middle and Intergenerational type housing added to diversify options currently available in the Covington market.
The Starting Point | 5 Year Vision
In the 5 year vision, the Intergenerational Village has a flexible Lawn to host recreational activities by day and outdoor movies by night. The Lawn is anchored by a Civic Building that can host after school study sessions, adult education workshops, and more. Behind it, the detention pond has been retrofitted to be a enjoyable amenity alongside a community garden. There is added Live + Work and Office space facing the Lawn, as well as additional Commercial/Retail buildings facing Bypass Road. The first phase of intergenerational townhomes and cottage courts have been built in the southern portion of the site. Finally, the first phase of the pedestrian walking + biking loop as been established at the center of the site.
Activity Sections
These two sections cutting vertically from By Pass Rd to the cottages demonstrate how activities can change throughout the day. During the morning, the village will provide activities oriented to seniors such as morning strolls on the loop and yoga sessions on the lawn. Later in the day, the village will provide activities for teens such as movie nights and more secluded spots for those who want to socialize in a more private area.
The Solution | Interventions on Intersection

The aim is to tackle methods of designing communities. Putting schools and shopping on big arterial roads that are designed to be high-speed thoroughfares for long-distance drivers and commuters should be accessorized by connecting grids for local activities. The existing condition at the intersection has multiple turning lanes, and dizzying traffic levels. Our solution proposes ways to get the pedestrians safely through this environment.

5 YEAR PLAN  Eliminating the slip turn helps create a pedestrian path. This facilitates eye contact by moving pedestrians directly into the driver’s field of vision.

30 YEAR PLAN  By stopping all traffic at once, scramble crossings provide better separation of cars and people, allowing foot traffic to move in any direction—even diagonally—in relative safety.
The Solution | Street Sections

A. 42' Section | 2-Way Vehicular

B. 36' Section | Pedestrian Loop at Buildings

C. 36' Section | Section at Lawn

D. 36' Section | Section at Detention Pond
The Solution | Stormwater Diagrams

**Existing Stormwater Diagram**

All surface runoff directed to a large detention pond

**New Stormwater Diagram**

**LEGEND**

a. Drains water out with vegetative buffer
b. Bio-filtration planters
c. Raingarden
d. Bioswales with shrubs
e. Raised overflow drain as catch basin
f. Cistern underneath lawn
Housing | Townhouses

- 3 levels
- 2nd & 3rd level unit can be rented or for the owner's use
- garage on first floor converted into an ADA accessible bedroom
- shaded porch on two levels
Housing | Townhouses

- 2 levels
- Garage can be converted to first level ADA accessible bedroom
- End unit adjacent to an activated alley
Housing | Cottage + ADU

- 2 levels
- ADU unit can be used as garage or office on ground level, second level can be rented or for the owner’s use

[Diagram of Cottage Section with plans for first and second floors, ADU elevation, and key plan]
Housing | Cottage + ADU

- 1 levels
- shared parking
- All amenities are ADA accessible
The Conclusion | The Big Picture

- TEENS + SENIORS
- E-SPORTS ARENA + HEALTHY FOOD CAFE
- FOOD TRUCKS + OUTDOOR SEATING
- SKATE PARK + DINER
- OUTDOOR THEATRE AT LAWN + GROUP CLASSES AT LAWN
- LIBRARY CAFE + GARDEN
- MANUAL LABOUR + COMMUNITY GARDEN
- GROUP FITNESS CLASSES + HOME SCIENCE CLASSES
- COLLABORATIVE LOOP + PEDESTRIAN LOOP
- VOLUNTEER CAREGIVERS + HEALTHCARE WING

1 loop
14 lawns + gardens
16 engaging spaces
6 housing types
What if we designed housing and retrofitted intersections for...

THANK YOU!

Covington's Intergenerational Village

ADITI BHARADWAJ | EMILY KHALID | ELENI KROI
What if we designed housing and retrofitted intersections for...

THE AUTONOMOUS VEHICLE

AV Sustainable Neighborhoods

JUN WANG | WANLI GAO
WHAT IF AUTONOMOUS VEHICLES WERE THE PRIMARY DRIVER FOR THE DESIGN OF HOUSING AND RETROFITTING THE INTERSECTION?

The automotive and IT industries are investing heavily in autonomous vehicles (AVs) but their impact on communities remains unknown. Transportation experts often refer to their potential to deliver Heaven or Hell.1 The hell scenario is generally associated with private AVs replacing driven cars and the likelihood of doubled congestion.2 The heaven scenario focuses much more on shared AVs—primarily AV shuttle buses, such as Toyota’s e-Palette. Our proposal demonstrates how Covington and Newton County might leverage a shared AV transit system to retrofit less sustainable suburban intersections into walkable, urban neighborhoods, (akin to Covington’s Downtown Square), providing more residents with more housing choices, more affordable and accessible transportation, and more opportunities to enjoy the twin benefits of urbanism and countryside that so distinguish this community.

The problems that a well-designed AV transit system can improve:

• The lack of transit. Newton County’s low density makes it very difficult to support current transit systems. However, by eliminating the 50-85% operating cost that goes to drivers, a shuttle system could operate efficiently and economically.
• Increased mobility for those who are too young, too old, or too disabled
• The high economic and environmental cost of commuting by private car. Approximately half of Covington residents are spending significant time and money commuting to Atlanta, polluting air, water, and soil and contributing to climate change.
• Lack of housing options. AV-based neighborhoods can provide a range of housing types not currently available in Covington or Newton County. We see opportunities for missing middle scale housing types that fit the needs of the area’s growing senior and other small household population.

Solving these problems allows for additional improvements to the quality of life for residents at several scales. We present forward-looking proposals at the regional scale, as well as at the neighborhood and building scale. Our model of an ideal AV-serviced neighborhood informs our proposal for the Jackson Highway-Bypass Road intersection. There we create a sustainable neighborhood by providing a high-tech data-based transportation system and a connected, safe, and walkable street network, where a diversity of affordable housings, efficient mobility choices, and convenient services together form a livable neighborhood. At the building scale, we show how access to the AV shuttle system enables new housing types to convert automobile-oriented spaces over time to more convivial spaces.

Based on our visionary AV sustainable neighborhood design rules, we adjust the logic to the intersection and try to make a practical design by eight strategies: market, transit, mobility, street and public realm, parking, land use, housing, and infrastructure. In five years, we will keep and retrofit some of the existing buildings. And in thirty years, we will have more development and increase density on the blocks close to the intersection.

1 Jeff Tumlin, Episode 1 Redesigning Cities, https://www.youtube.com/watch?v=iIXY5owFHgM; Robin Chase, Self-driving Cars: The Hell Scenario, https://www.youtube.com/watch?v=g6MVY443tjM.
2 Zachary Lancaster, Ellen Dunham-Jones, Best Practices for Improving User Experience in AV Shuttles.
HEAVEN OR HELL?

The industries are investing heavily in autonomous vehicles (AVs) but the impact on communities are still unknown.

HEAVEN?

- Shared Rides
- Safe
- Quiet
- Clean Streets?

OR

HELL?

- All Private AVs
- More Sprawl
- 2X congestion?

PROMISES OF AUTONOMOUS VEHICLE

1: MOBILITY

By increasing the options of transportation and promoting shared AVs, we can just move people not cars.

Money Saving

- Average monthly payment on a new car: $6276/year
- For vehicles driven 15,000 miles a year, car ownership costs: $8,469/year

Time Saving

- 43% driver wages and benefits
- 30% multiple uses while travelling

2: LIVABILITY

AV can help us to create a people based neighborhood where is quieter, safer and more walkable.

Higher Occupancy Rate

Multi-Modal Mobility

Less Space on the Road

3: AFFORDABILITY

We can save money on driver wages, and ownership of a car, also save time on multiple uses while travelling on the road.

Safer Neighborhood

More Sustainable & Livable Environment

A Healthier Lifestyle

Over 80% of car crashes in the US are caused by driver error
COVINGTON AS A SUBURBAN SMALL TOWN

DISTANCE TO GREEN SPACES

PROBLEM:
Lack of access to green spaces
Long distance to parks

SOLUTION:
Provide more green spaces on site
Repurpose part of the golf course into a park
Connect with other parks by public transportation

TOO FAR TO ANY SERVICES

PROBLEM:
Long distance to other service areas

SOLUTION:
Provide more services on site
Connect with other service areas by public transportation

UNABLE TO DRIVE

PROBLEM:
Around 1/3 of the population are not able to drive

SOLUTION:
Pay attention to those people who can’t drive
Provide diverse living options for different types of people

PROBLEM:
Lack of access to services
Less walkability

SOLUTION:
Provide more services around the site
Relocate existing services
Reduce traffic lanes and slow down traffic

CREATE AN AV SUSTAINABLE NEIGHBORHOOD

- Connected
- Livable
- High Tech
- Diverse
- Safe
- Efficient
- Affordable
- Convenient
- Wakable
- Sustainable

STUDY OF GRIDS AND NODES

Take example of the grid of Savannah and the block dimension of Downtown Covington

Downtown Covington Grid

Existing Grid

Savannah Grid

AV Sustainable Neighborhood Grid

Precedent: Peter Calthorpe, The Urban Network: A New Framework for Growth
TRANSPORTATION SYSTEM

- Major road
- Road for driven cars
- Shuttle bus route
- Community road
- Open space

LIVING PATTERNS ON STREETS

**Regional Shuttle Bus**
- Between Atlanta-Covington-Site
- 30-70mph
- Every 30 min (peak time)
- Every 1 h (other daytime)

**Neighborhood Bus**
- Between nodes
- 15-40mph
- Every 15 min (daytime)
- Every 30 min (other time)

**Community Road**
- Shared by pedestrians, bikes, AVs, and driven cars
- Safe walking and biking environment with specific lanes and street lights

**Driven Car Street**
- Shared by pedestrians, bikes and AVs
- Connect green spaces
- A boulevard transformed from a highway

**Major Road**
- Two lanes for shuttle buses
- A boulevard changed from a highway
- A round/square about at the intersection

**Downtown Street**
- A lane for neighborhood shuttle buses
- Ground floor retail
- Outdoor dining tables

**Driven Car Street**
- A lane shared by driven cars and AVs
- A shared street
- Low speed traffic

**Community Road**
- A curved lane for AV
- A shared street
- More green and playful space
MISSING MIDDLE HOUSING SYSTEM

CREATION OF NEIGHBORHOOD

**Round/Square About**
- A bus stop at each of the corner
- Ground floor retail behind the store
- A 1-2 floors bar/cafes at the round/square
- about with a roof top

**FAR:** ~ 0.4

**Missing Middle Town Houses**
- A shared green space
- 2-3 floors townhouse
- 3-4 floors multi family house
- Ground floor units transformed from garages

**FAR:** ~ 1.2

**Mid Density Mixed Uses**
- 4-6 floors Mixed used commercial and residential building with small units
- 2-3 floors live-work building for young people

**FAR:** ~ 2.0

**Low Density Single Family**
- 2-3 floors townhouses and single family houses with ground floor units transformed from garages
- 1 floor unit transformed from detached garage

**FAR:** ~ 0.9

A - Mixed Used Building
- Live/Work units for young people
- More collaborative space

B - Shared Courtyard
- A shared open space
- Townhouses and Mix used building

C - Single Family
- A detached garage that can be transformed into a living unit
POLYCENTRIC TRANSIT-SERVED SMALL TOWN URBANISM

We propose a regional plan throughout Newton County to show the applicability of our ideal AV neighborhood into a larger transit system at key intersections. We also propose a more connected street network in Covington expanding access to the transit. Shuttle bus routes are intertwined into this system.

This regional plan shows the possibility of mass operation of autonomous vehicles in small towns like Covington.
Build the first phase of the AV Logistics Hub (red) and the lower-density, mostly residential buildings to the East.

5 YEARS PLAN
Infill with higher-density, mixed-use buildings on a walkable street grid around the retrofitted intersection

30 YEARS PLAN
**POTENTIAL MARKET**

Who are not willing to drive or those how are too old, too young or too disabled to drive.

- People in Atlanta and enjoy suburban living environment
- People who need affordable housing
- Senior citizen
- Kid
- The disabled

---

**MULTI-MODAL MOBILITY**

- Truck: 10-20 people
- Palette: 4-10 people
- Golf Cart: 1-4 people

**AUTONOMOUS TRANSIT SYSTEM**

- Propose a shuttle bus line connecting Atlanta and Covington to help people save time and money on commuting
- Attract climate refugees from nearby towns
- Provide diverse and affordable housing with smaller units to meet the demands of people with various budgets
- Provide a mixture of natural and urban living environment

- Provide ground floor housing unit designed based on ADA design guidelines
- Transform some of the ground floor garages into living units
- Introduce more convenient services and pedestrian-friendly streets while keeping and adding more green spaces
- Retrofit part of the nearby golf course into a public park in order to increase the benefits on public health

---

**FREIGHT**

- 40-70 mph (on major road)
- 20-40 mph (on shared street)
- 10-30 mph (on community road)
INFRASTRUCTURE INNOVATION

- Call & stop, take shared AV at any spot near your neighborhood.
- No curb between bike land and AV lanes.
- Lane for AV shuttles: two lanes combined could serve for a full-size bus.
- Solar panel roof of logistic hub.
- PUDO with bike parking and package pick-ups.
- Smart traffic light, virtual signs.
- Integrated charging pillar & street lightening.
SHIFT PARKING SPACE TO USEFUL PLACES

Because of the development of autonomous vehicles, we assume that the needs of parking space will reduce in the future. Our parking space in 5-year plan should be capable of transforming to parks and other useful spaces to accommodate to the new lifestyles involving less car ownership in the future.

Upon finishing of the 30-year plan, the site will have 264-280 parking spaces contributing by automated stacking parking, night time street side parking and dynamic parking lots.
MISSING MIDDLE HOUSING TYPES

Housing types with walk-in no stair units on the ground level to meet special needs.

Cottage plan, Stacked Flats

2-level Townhouse above Ground Floor Flat

Dual-fronted Stacked Flats
In terms of public realm, we insert little neighborhood garden along the street to make the walking experience on straight street less tedious and more interesting visually.
The golf course to the east side of our site is redesigned with a new trail to be more suitable for the residents to take recreations.
The public realm should make socializing possible and promotes interactions of people.
What if we designed housing and retrofitted intersections for...

CLIMATE CHANGE

LIVE . GROW . SHARE

CREATING A CLIMATE RESILIENT COMMUNITY

SHREYA HAREESH KUMAR | JOSHUA MACBETH
What if addressing climate change was the primary driver for the design of housing and retrofitting the intersection?

US EPA predicts that climate change over the next few decades will make Georgia experience more flooding as well as droughts, retreating shorelines, and increased risk of heat stroke and heat-related illnesses. The development patterns of the intersection of Jackson Highway and Bypass Road illustrate how these risks may be exacerbated.

Climate migration:
The sea-level rise due to global warming can render many coastal cities underwater and Florida is our closest state which can face this problem. People moving out of these cities then need to take shelter elsewhere and Atlanta along with several other cities can have a large influx of people in need of food and shelter.

Floods and Droughts:
The increasing number of impermeable surfaces such as asphalt causes runoff which then contaminates the water. This in turn pollutes the waterbodies it flows into. This run off along with increasing severe storms results in flooding. The other threat due to lack of water management is the rise of drought-prone areas during long spans without rain causing heavy loss of agriculture and thus food insecurity.

Heatwaves:
A growing concern is rising temperatures which can later result in threats like droughts and loss of ecosystems. It is predicted that by midcentury, the coldest and warmest daily temperatures are expected to increase by at least 5°F in most areas and by 10°F by late century. It is necessary to tap this resource to course through harsh periods such as hotter summers due to rising in temperatures brought by global warming.

In addition, residents of Covington and Newton County in the census block of our site area contribute to climate change by their average emission of 10.71 tonnes of greenhouse gases, largely due to their 25,806 average annual vehicle miles traveled. This high level of auto dependency consumes 26% of the residents’ income, slightly higher than the 25% they spend on housing.

How might Covington and Newton County simultaneously mitigate climate change, adapt the built environment away from conditions that exacerbate runoff and urban heat island impacts, while enhancing affordability and sustainability?

THE PROPOSAL:
As a response to manage these pressing concerns, we propose to prepare to adapt to these changing scenarios and thus mitigate the scale of their impact. Creating a climate resilient neighborhood which can not only sustain itself through farming but generate development that promotes a safe environment which promotes physical and mental well-being and thus helps bring people together. The core concepts which come together to make this community are as follows:

**URBAN FARMING**
- Growing food in individual plots or larger plots for farming
- Green houses and raised beds
- Protecting the soil

**WATER MANAGEMENT**
- Storage of water in cisterns through rainwater collection systems
- Distribution through the site and its resultant filtration
- Permeable surfaces

**WALKABILITY**
- Smaller blocks and shared street systems
- Reducing dependence on automobiles by promoting use of bikes

Creating a climate resilient community
The proposal concentrates on farming as a source of nutrition and a binding concept for community development. As water is an important source for this and its efficient storage and distribution forms the core of the design. Housing with emphasis to passive systems for wind and sunlight are proposed to occupy the center of the site while the front, rear and the NE side are dedicated to farming. The housing has a small portion of their dedication to small scale growing and gardening in the spirit of the communal concept. The site also features community-building established on cultivation such as barns, restaurants and communal kitchens. These then extrapolate to create a food-based community thus urbanizing the intersection with the understanding of its existing conditions of use. The four quadrants of the intersection prosper from the idea of growing food and feature market spaces for the selling of food, food halls for the supply of processed food and expanded housing communities which develop on this food system.
Why would a **half-degree** rise in temperature create a climate concern?
A half-degree rise in temperature would affect millions of people.
**CLIMATE MIGRATION**

As sea levels rise due to global warming, many coastal cities will be forced to migrate. Georgia's urban areas are attractive for these refugees and will see an influx in population.

**FLOODS AND DROUGHTS**

Increasing severe storms can result in flash flooding during growing seasons as well as periodic droughts which can greatly affect farmers' abilities to harvest crops.

**URBAN HEAT ISLAND**

As temperatures rise due to global warming, vulnerable populations have seen deaths from extreme heat. The energy consumption of buildings has greatly increased to meet the cooling demands.

---

**CLIMATE MIGRATION**

As populations increase from climate migration, we can begin to design smarter communities that are self-sustaining.

**FLOODS AND DROUGHTS**

To combat the increased floods and droughts, we want to control water at both periods in time to reduce crop impact and save on irrigation.

**URBAN HEAT ISLAND**

As we experience extreme heat waves, we want to implement heat reduction and energy saving techniques that will create a more walkable environment and sustainable home.
REGIONAL ANALYSIS
IDENTIFYING REGIONAL WATER AND CONNECTIVITY

IDENTIFYING WATER SOURCES AND SUPPLIES TO PROTECT

IDENTIFYING REGIONAL WATER AND CONNECTIVITY

IDENTIFYING WASTE MANAGEMENT TO CREATE UTILITY NETWORK

IDENTIFYING CONNECTIONS TO DOWNTOWN COVINGTON

PROPOSED KEY RELATIONS AT THE SITE LEVEL
SITE ANALYSIS
DECONSTRUCTING THE 30-YEAR REGULATING PLAN

30-YEAR REGULATING PLAN

THE CITY OF COVINGTON NORTH SIDE FOCUSES ON AN URBAN INNER CORE FACING THE MAIN ROADS AND A FARMING OUTER CORE. THE FARMING COMPONENT ACTS AS A GREEN BARRIER TO THE CREEK.

THE NEWTON COUNTY SOUTH SIDE MAINTAINS AN URBAN INNER CORE, THAT BEGINS TO INTEGRATE A RESIDENTIAL INTO THE FARMING OUTER CORE.
SOUTHWEST QUADRANT
REGROWING THE FOREST AS AN ORCHARD

- Water flows from the southwest corner to the north and east sides of the development. Cleaning and capturing this water before it reaches the main streets is important to the design.

- We want to maintain an orchard on the southwest side of the development to restore trees and provide food for the area.

- The original gas station is a contaminated soil site, growing here will be difficult. We suggest a recreation space and restaurant corner that compliment the raw produce sales across the street.
**NORTHWEST QUADRANT**

**BUILDING ON THE PARKING AND GROWING ON THE LAWNS**

- Water flows from the southwest corner to the north side of the development. Cleaning and capturing this water before it reaches the creek is important to the design.

- The existing disturbed soil can be converted to growing plots that utilize the water flow patterns for irrigation.
NORTHEAST QUADRANT

PRESERVING THE FOREST AND MAXIMIZING THE CREEK

- STOPPING THE CONTAMINATED WATER FROM THE SOUTHWEST PORTION OF THE SITE FROM ENTERING THE CREEK AND MAXIMIZING THE GROWTH POTENTIAL OF BUILDING ON THE ENRICHED SOIL NEAR THE CREEK ARE KEY TO THIS DESIGN.

- MAINTAINING AS MUCH AREA FOR THE GROWTH OF TREES WITHOUT FURTHERING DEVELOPMENT NORTH IS A CONSCIOUS CLIMATE CHANGE CONTROL WE ARE EMPLOYING.
• WATER FLOWS FROM THE SOUTHEAST CORNER TO THE NORTH AND WEST SIDE OF THE DEVELOPMENT. CLEANING AND CAPTURING THIS WATER BEFORE IT REACHES THE STREET IS IMPORTANT TO THE DESIGN.

• THERE IS AN EXISTING RIDGE LINE THAT DIVIDES THE QUADRANT INTO TWO AREAS. DIRECTING THE SOUTH WATER TO A CENTRAL GREEN SPACE WILL HELP REDUCE THE RUNOFF THAT FALLS ONTO THE NORTH HALF OF THE SITE.

• REPOSITIONING THE DETENTION POND AND WATER RETENTION AREA TO THE PERIMETER OF THE 5-YEAR SITE ALLOWS FOR MORE DEVELOPMENT.
STREETS AND ROADS
DECONSTRUCTING THE 30-YEAR REGULATING PLAN

PLACEMAKING AND PERMEABILITY

The outer loop maintains a wider right of way to sustain tractor travel between farms. This loop, being less active, allows for shared access by pedestrians.

The inner loop contains the commercial and live/work areas.

The colors indicate a change in permeable material between areas.

WALKABILITY AND ACCESSIBILITY

The design creates more walkability and bikeability to designated green spaces and destinations.

The road system reduces traffic speed to indicate to drivers on the main roads they are entering a more pedestrian environment.
ILLUSTRATIVE PLAN
FIVE YEAR PROPOSAL

THE 5-YEAR SITE STARTS WITH THE HOUSING COMMUNITY IN THE CENTRE AND THE FARMING DEVELOPING ON THE PERIPHERY WHICH LATER EXPANDS TO THE OTHER QUADRANTS.

THE COMMERCIAL CORRIDOR FEATURES RESTAURANTS AND STORES BASED OFF THE PRODUCE FROM THE FARMING.

THE TWO STREET SYSTEMS LATER FORM PARTS OF THE INNER AND OUTER LOOPS. THE RESIDENTIAL SHARED STREET HAS HOUSING FRONTING IT THUS FOSTERING NEIGHBOR INTERACTIONS THROUGH THE GARDENS.
STREET SECTIONS
SHOWING STREET TYPOLOGIES
SITE SECTION
SECTION SHOWING THE REDUCING SCALE OF HOUSING

THE INDIVIDUAL GARDEN PLOTS ENCOURAGE INTERACTIONS BETWEEN THE RESIDENTS AND PEDESTRIANS AND ACROSS THE HOUSING.
SINGLE FAMILY
ONE UNIT

- CAN BE ADAPT ED INTO TWO UNI T S.
- BACKYARDS PROVISION TO GROW GARDENS AND RAISED BEDS.
SINGLE FAMILY
SECTION AND STREET ELEVATION

- The clerestory window captures the north light along with the skylight which services the living space.
- Operable windows on the two floors help create stack effect.
DUPLEX HOUSING
CO-HOUSING
DUPLEX HOUSING
SECTIONAL DETAIL AND STREET ELEVATION

- CO-HOUSING WITH ADU UNIT ON FIRST FLOOR AND ANOTHER ON THE SECOND FLOOR.
- PROMOTES INTERGENERATIONAL INTERACTIONS THROUGH SPACE SHARING AND GARDENING.
- THE CLERESTORY WINDOWS ON EITHER SIDES PROVIDE LIGHT AND VENTILATION.
- THE SATIR ACTS AS A WIND TOWER DIRECTING AIR INTO THE SPACE.
LIVE-WORK UNIT
SINGLE UNIT

FIRST FLOOR

SECOND FLOOR

SITE LOCATION
LIVE-WORK UNIT
SECTION SHOWING THE ROOF SLOPES AND THE STAIR CORE

- SINGLE FAMILY UNIT WHICH CAN BE ADAPTED INTO A CO-HOUSING WITH MAXIMUM 4 UNITS.
- FIRST FLOOR CAN BE CONVERTED INTO ADU.
- THE BALCONY PROVIDES BUFFER FROM SOUTH WESTERN RADIATION
- STAIR CORE ACTS AS A DRIVER FOR WIND AND PROVIDES LIGHT.
LIVE-WORK UNIT

STREET ELEVATION

ELEVATION SHOWS THE FRONT OF THE BUILDING WITH THE CLERESTORY WINDOW
QUADPLEX HOUSING
GARDENS AND GREEN HOUSE

SITE LOCATION

THIRD FLOOR: GREENHOUSE
QUADPLEX HOUSING
SECTION FEATURING THE COMMUNAL GREENHOUSE

- FOUR UNITS: TWO 1-BEDROOM AND TWO 2-BEDROOM.
- GREENHOUSE ACTS AS A COMMUNAL SPACE AND FACILITATES AIR MOVEMENT THROUGH THE FLOORS.
- THE OPERABLE SKYLIGHTS PROVIDE LIGHT AND VENTILATION.
- WESTERN PORTION IS BUFFERED BY THE GARDEN.
QUADPLEX HOUSING
FRONT AND SIDE ELEVATIONS

FARMHOUSE FROM THE FRONT AND A GREENHOUSE FROM THE SIDE
PASSIVE COOLING AND HEAT GAIN
DESIGNING TO REDUCE ENERGY CONSUMPTION USING THE SUN

- WESTERN FACING SOLAR HEAT COLLECTORS ARE EMPLOYED TO CAPTURE THE MAXIMUM AMOUNT OF SUNLIGHT TO REDUCE HEAT GAIN AND PRODUCE ELECTRICITY.
- ROOF WINDOWS VENT THE WARM SUMMER AIR.

- ROOF OVERHANGS PREVENT DIRECT SUMMER HEAT GAIN, BUT ALLOW FOR BETTER WINTER HEAT GAIN WHEN IT IS NEEDED.
- STAIRCASES ARE ESSENTIAL TO THE PASSIVE COOLING SYSTEM TO ALLOW HOT AIR TO RISE OUT OF THE HOUSE.
SOLAR ORIENTATION
ROOF SLOPE DIRECTION

THE SLOPES OF THE ROOF ARE ORIENTED 17° TO THE SOUTH FOR MAXIMIZING THE SOLAR CAPTURE THROUGH SUMMER AND WINTER.
REUSING WATER AND WASTE
A LOOK AT WATER CAPTURING AND COMPOST

- WATER IS COLLECTED FROM THE ROOF BACK TO A CISTERN LOCATED IN THE GARDEN TO BE REUSED FOR THE HOUSE AND THE GARDEN.

- WASTE IS COLLECTED FROM THE RESTROOMS AND RECYCLED AS FERTILIZER IN THE GARDEN. NEW COMMERCIAL DEVELOPMENTS UTILIZE THE HOUSING TO THE WASTEWATER TREATMENT FACILITY ON BYPASS ROAD.
THE VISION
TO CREATE A MODEL FOR A CLIMATE RESILIENT COMMUNITY
THANK YOU
What if we designed housing and retrofitted intersections for the...

SHRINKING MIDDLE CLASS

Newton Crossing

JOEL JASSU  |  GEORGE DOYLE
INTRODUCTION & EXECUTIVE SUMMARY

The middle class, often understood as the backbone of American small towns and suburban life, has been shrinking since the mid-1980s as income disparities have grown. In general, while real wages for the middle class have remained relatively stagnant, ordinary household expenses and costs have risen. The most significant of these rising costs are that of housing, transportation, healthcare, and labor/education. While urban design cannot resolve the causes of income inequality, it can support more affordable and healthier lifestyle solutions that shrinking middle class households and communities need in order to better prosper in an everchanging society. There is a unique opportunity to mitigate these income inequality concerns by first identifying the issues seen within rising housing, transportation, healthcare, and education costs and subsequently proposing real design-based solutions for them.

So, what does this mean for Covington and the greater county of Newton? It means that at this moment, we can implement an inspiration to transform the Covington community from a typical American intersection into a more beautiful and desirable place where everyone wants to be at and enjoy. Table 1 below highlights the rising household costs seen within Covington, Georgia. The table identifies local issues identified within these cost brackets, which drove our resultant proposal and the design-based solutions implemented throughout to resolve these local issues.

Newton Crossing addresses the socioeconomic and geographic disparities within Covington by activating spaces so that all people can enjoy its small-town chemistry. By developing affordable, diverse, missing middle housing types that require less land and more opportunities for rental income, Newton Crossing establishes intergenerational places for empty-nesters and new families that fosters a more complete full-service city. Newton Crossing provides a location for residences, convenient goods, and services directly adjacent to single-family neighborhoods. It satisfies the common and frequent needs of the residents of nearby neighborhoods. Its design standards and parameters encourage a pedestrian-friendly traditional urban form, oriented to pedestrians, that limits conflicts experienced between vehicles and pedestrians. Through implementing this proposed plan, Newton County and the City of Covington can begin to tackle the housing demands of the shrinking middle class and aging population, leading the way for other American small-town communities to enhance the lives of their people for many years to come.

<table>
<thead>
<tr>
<th>Issues Identified</th>
<th>Solutions Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>An average of 30% of income is spent on housing. Limited housing options exist other than single-family types.</td>
<td>Affordable, diverse, missing middle housing types that require less land and more opportunities for rental income.</td>
</tr>
<tr>
<td>An average of 20% of income is spent on transportation, largely due to the low-density urban form, high-speed commutes.</td>
<td>Introducing new driving apparatus options like golf carts. Wayside mixed-use neighborhoods; retrofitting arterials within neighborhoods to lower speeds.</td>
</tr>
<tr>
<td>Obesity is the leading cause of heart disease and diabetes; both of which are the most common chronic diseases.</td>
<td>Preventing chronic causes of death by implementing walkable, exercise-oriented, park and trail ways interconnectivity.</td>
</tr>
<tr>
<td>No home-trade workshops seen within Covington; limited night economics courses are provided to teach financial literacy.</td>
<td>On-site live-work options for ground floor incubator workshops spaces; local programming to teach financial literacy to community members.</td>
</tr>
</tbody>
</table>
A SHRINKING MIDDLE CLASS
IDENTIFYING A SHRINKING MIDDLE CLASS

Since the mid 1980’s, middle class wages have remained relatively stagnant. In contrast, ordinary household expenses and transportation costs have risen. The most significant of these rising costs are that of housing, transportation, healthcare, and education. Images provided on the right show these growths in prices and earnings, as well as the national average minimum wages in regions where people can afford two-bedroom apartments. These diagrams, provided in a Fortune article that introduced the idea of a Shrinking Middle Class in late 2018, were used in reference to our end-design of an intergenerational place for everyone.

According to the Economic Policy Institute, the productivity of the economy grew 77% between 1973 and 2017. The average compensation of this productivity only rose 12.4%, adjusted for inflation. Statistics from both the Federal Reserve Bank and Edward Wolff state that of the average middle-class American family, 47% of them can’t afford to pay for a $400 emergency; 40% of them can’t raise $2,000 in a month; it takes approximately 21 days for a family to liquidate all their financial reserves if no steady stream of income is made. These national statistics are real and an immediate concern for not just Americans, but the global population as well. As the COVID-19 crisis continues to affect daily lifestyles, these numbers are expected to have an even deeper impact on the purses of middle-class families.

Resolving a shrinking middle class and its issues is not a future concern, it is an immediate concern. In neighborhoods directly adjacent to our site, 65% of annual income made is spent on housing and transportation costs. These values derived from the Housing + Transportation (H+T) Index, which combines the 30% housing costs with that of the 29% transportation and 6% vehicle miles travelled (VMT) costs. Chronic healthcare issues like obesity, heart disease, and diabetes are also common trends found not only in Covington but in other typical American towns. Regarding education, there are no home-trade workshop options available in the immediate area. Additionally, limited night-class options are available for locals and daytime workers who aim to pursue higher education at times that work for their schedules. New education and labor options should be implemented in this area to foster a sense of financial literacy that currently struggles to exist.

Alternative housing and transportation options were considered and incorporated in the overall design of Newton Crossing. In doing so, the existing mismatch between the available housing stock and what the market needs and wants can be better met. The housing types provided, 10 variations in total, accommodate for the needs and demands of local household demographics that are missing from existing residencies. Missing housing types throughout the United States are mostly due to the regulatory constraints put in place since the early 1940s, which shifted American culture to auto-related patterns of development and financing. Covington is an auto-dependent community. By looking at new driving options like the golf cart, we found that almost $13,000 can be saved by middle-class families if they opt in to paying annual costs for a new golf cart versus a new car. This money saved can not only alleviate existing financial pressures burdened on a shrinking middle class but can also help stimulate local economies with this new redistribution of wealth. In implementing these housing and transportation changes to the existing built environment, we have provided a scenario where more walkable and desirable places have been built.
WHAT ARE THE ISSUES?

Of all typical American Middle-Class families...

47% Can’t afford a $400 emergency

40% Can’t raise $2,000 in 30 days

21 DAYS The average household can live on financial reserves until exhausted

Population of Americans who are 65+ years old

<table>
<thead>
<tr>
<th>2020</th>
<th>2050</th>
</tr>
</thead>
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<td>46 million</td>
<td>90 million</td>
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<th>Transportation</th>
<th>Healthcare</th>
<th>Labor/Education</th>
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</table>
WHAT ARE THE SOLUTIONS?

H+T Index Statistics at Site Location

$57,000 vs. $19,950
Average Income Disposable Income Remaining

30% of income is spent on housing
29% of income is spent on transportation
6% of income is spent on miles driven

Common chronic diseases like heart disease and diabetes
No home-trade workshops seen within Covington

$17,030 - $4,285 = $12,745
New Car New Golf Cart Difference

Annual Transportation Expenses

<table>
<thead>
<tr>
<th>HOUSING</th>
<th>TRANSPORTATION</th>
<th>HEALTHCARE</th>
<th>LABOR/EDUCATION</th>
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<td>Solutions Proposed</td>
<td>Ten affordable, diverse, missing middle housing types</td>
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<tr>
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<td></td>
<td>Implementing walkable, exercise-oriented, park and trail-way interconnectivity</td>
<td>On-site live-work options for ground floor incubator / workshop spaces</td>
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A Shrinking Middle Class | 7
THE SITE & ITS REGIONAL OPPORTUNITY

1. Link displaced neighborhoods together
2. Foster a more complete full-service community
3. Implement small-town urbanism in creative ways

1. Connect with the Recreational Cricket Frog Trail
2. Strategize for Internal Capture Rates
3. Increase Street Congestion, Increase Mode-Splits
THE INTERSECTION & ITS REGIONAL OPPORTUNITY

Existing Conditions

5- Year Proposal

Long Term Vision

1. Reduce existing speeds from 45 MPH to 25 MPH
2. Activate spaces between schools for more pedestrian and bicycle uses
3. Link people between the Indian Creek Middle School and Eastside High School
4. Implement mode-split variants through Cricket Frog Trail connections
5. Reclaim ROW for pedestrian, bicyclist, and ADA accessibilities
6. Increase existing roadway volume capacities and traffic operations
7. Enhance roadway environmental factors that are aimed towards pedestrian priority
LONG-TERM VISION
HOW DO WE START?
Of all typical American Middle-Class families...

- 47% Can't afford a $400 emergency
- 40% Can't raise $2,000 in 30 days

Populations of Americans who are 65+ years old
- 2020: 46 million
- 2050: 90 million

Designing & Developing An Intergenerational Place For Everyone

- More Affordable Housing Options
- Empty Nesters
- New Families
- Live-Work Environments
- Market-Driven Choices
- Young Professionals

CAPITALIZING ON UNDERREPRESENTED MARKETS

1. Connect to the immediate residential neighborhood
2. Capitalize on existing infrastructure
3. Provide a variety of housing options
4. Promote intergenerational learning and living

Phase 1 of long term vision:
- 10 Housing Types
- 169 Total Units
BRINGING GENERATIONS TOGETHER

1. Existing CVS
2. Existing McDonalds
3. Pedestrian Only Walkway
4. Residential Courtyard
5. Pedestrian Loop
HOUSING VARIETIES + LIFESTYLES

- Mail Room / Post Office Box
- Golf Cart Parking
- Split Levels
- Cottages
- ADUs
- Townhouses
- Multi-Family
- Duplexes
- Apartments
- Incubator / Workshop with Residential
5-YEAR PLAN ROAD RETROFIT

1. 10’ Apron for NB U-Turns going South
2. WB-Left RCUT median
3. WB-Left RCUT storage lane and median
4. Pedestrian HAWK Signal
5. EB Receiving Lane – East of Site onward
6. ¾ Access Driveway – McDonald’s
7. ¾ Access Driveway – Site

Maintain Existing:
8. Traffic Signal
9. Intersection Geometries
10. RIRO

RIRO = Right-In-Right-Out
RCUT = Restricted Crossing U-Turn

Reduce Posted
45 MPH Speed

To a Posted
25 MPH Speed
5-YEAR PLAN ROAD SIGNAGE

How Do We Start?
COMPREHENSIVE PLAN
LEARNING FROM SMALL-TOWN URBANISM

Proposed Newton Crossing Interchange

Existing Downtown Covington GA
INCREMENTAL DEVELOPMENT

STRATEGY

1. Neighborhood Connection
2. Building a commercial core
3. Capitalizing on creek and square
4. Dealing with edge conditions
LEGEND

1. Retrofitted Intersection
2. Restored Creek
3. Residential Square
4. Intergenerational Community

COMPREHENSIVE PLAN
HEALTHY MODALITY

LEGEND

- Major State Roads
- Complete Streets
- Safe Pedestrian Ways
MAIN STREET ECONOMIES

New internal capture trips from adjacent neighborhoods enter our site, spurring new forms of economic development along corridors. These internal capture trips will attract 3-mile or less vehicular trips that currently use roadway corridors. By reallocating these existing vehicular trips on to new platforms, we can begin the interventions needed along corridors that optimize their capacities and traffic operations. Simultaneously, we have allowed the opportunity for new Main Street economies to flourish by activating pedestrian boulevards that slow vehicular speeds. The area produces a sense of vibrancy and congestion that store-front owners desire in any ideal development.

THE CROSSING + INTERCHANGE

1. Street-level Incubator and Workshops
2. Live-Work Opportunities
3. Pedestrian Highways
4. Greenways
PUBLIC & ENVIRONMENTAL

RESIDENTIAL SQUARES
1. Reduced Internal Congestion
2. Interactive Public Spaces
3. Shaded Green Spaces
4. Pocket Parks
LEVERAGING THE CREEK

1. Reducing impact fees, further reducing housing costs
2. Reducing burden and the city’s stormwater plant
3. Reducing local environmental costs
4. Increasing resilience
5. Promote healthy living
NEIGHBORHOOD ACCESS

1. Connect residential and commercial cores
2. Promote safe streets
3. Foster more opportunities for intergeneration interactions

COMPLETE STREETS

LEGEND

1. Neighborhood Services/Incubators
2. Town Homes
3. Safe Pedestrian Streets
4. Street Front Home Office
BUILDING COMMUNITIES

MULTI MODAL STREET
Caters for all transportation means

HOME OFFICE/WORK
Supports creation of extra income

ATTACHED ADU
Varies living choices and solves front-back issue

DISTRICT STORMWATER
Reduces single unit utility expenses

DUPLEX
Can create extra income if owned by individual

PEDESTRIAN LOOP
Used for movement and exercise

Joel Jassu and George Doyle // Georgia Institute of Technology // April 2020
GENERATING ADDITIONAL INCOME

DISTRICT WASTE
Source of energy and reduces waste costs

GOLF CART
Cheap and safe for elder and middle class residents

DISTRICT STORMWATER
Reduces single unit utility expenses

STACKED DUPLEX
Supports intergenerational living

PEDESTRIAN LOOP
Supports community connections
PEDESTRIAN ORIENTED

LEGEND
1. Town Homes
2. Multi-Family
3. Public Space
STARTER COTTAGES

LEGEND
1. Cottages
2. Private Garden
3. Town Homes
4. Multi-Family
CONCLUDING THOUGHTS
OUR RECOMMENDATIONS

01 Re-Zoning: To Neighborhood Mixed Use (NM) from the current Commercial Office district. Implement a low density development oriented towards pedestrians. NM districts are for residences, convenient goods, and services directly adjacent to single-family neighborhoods.

02 Mitigate the Following Existing Conditions:
1. Posted Speed 45 MPH; signal-controlled
2. High speeds within school zones
3. Walkability concerns for adjacent neighborhoods
4. Unwelcoming environments for pedestrians, where priority is currently given to automotive vehicles
5. Poorly optimized traffic operations and capacities; reimage the concept of Level-of-Service (LOS)

03 Foster An Intergenerational Place to Live and Learn: Design and develop communities that fosters intergenerational collaboration, learning and living.

04 Reclaim R.O.W for pedestrians, cyclists and ADA accessibilities: Implement incremental roadway retrofits that foster a full-service community and lower speeds within school zones.
HUMAN SCALE AND LIVABILITY

SAFETY
New proposed road median safe for crossing and broken activities.

ATTACHED ADU
Varies living choices and solves front-back issue.

CIVIC SPACES
Multiple scale social spaces fosters community interactions.

TOWN HOMES
Housing located close to social spaces.

PRIVATE COURT
Supports community connections with immediate neighbors.

GOLF CART
Cheap and safe for elder and mobile class residents.

COTTAGES
Provides cheap starter home and supports empty nests.

PEDESTRIAN LOOP
Supports community connections.

HUMAN SCALE AND LIVABILITY
Housing types that accommodate for this missing middle demand are house-scale based and compatible in form, allowing builders to attract not just entry-level buyers, but those looking for smaller and higher-quality units. The missing middle housing types needed for and demanded by the shrinking middle class, as defined by Daniel Parolek, offer “a great way to deliver affordable housing choices by reflecting the flexible designs and lifestyle choices needed to emulate the dynamic demographics of Covington. These types include:

- Stacked Duplexes
- Three-Bedroom Apartments
- Two-Bedroom Apartments
- Townhome D, Standalone
- Townhome B with ADU
- Multi-Family with ADU
- Two-Story Duplexes
- Cottage Homes
- Townhome A with ADU
- FLOORPLAN 1: Stacked Duplexes
  - Scale: 1/4" = 1'
  - Living Room
  - Stoop
  - Kitchen
- FLOORPLAN 2: Townhome Type A - with ADU
  - Scale: 1/4" = 1'
  - Living Room
  - Guest Bath
  - Kitchen
- FLOORPLAN 3: Cottage Home
  - Scale: 1/4" = 1'
  - Living Room
  - Kitchen
- FLOORPLAN 4: Two-Story Duplex Home
  - Scale: 1/4" = 1'
  - Living Room
  - Bathroom
  - Kitchen
- FLOORPLAN 5: Multi-Family Housing - with ADUs
  - Scale: 1/4" = 1'
  - Living Room
  - Bath
  - Bed
- FLOORPLAN 6: Three-Bedroom Apartment
  - Scale: 1/4" = 1'
  - Living Room
  - Bath
  - Bed
- FLOORPLAN 7: Townhome Type C - with ADU
  - Scale: 1/4" = 1'
  - Living Room
  - Guest Bath
  - Kitchen
- FLOORPLAN 8: Townhome Type D - Standalone
  - Scale: 1/4" = 1'
  - Kitchen
  - Pantry
- FLOORPLAN 9: Two-Bedroom Apartment
  - Scale: 1/4" = 1'
  - Living Room
  - Bath
  - Bed
- FLOORPLAN 10: Three-Bedroom Apartment
  - Scale: 1/4" = 1'
  - Living Room
  - Bath
  - Bed
“Covington’s zoning code contains provisions for innovative housing solutions. Certain single-family zoning categories allow for **accessory dwelling units**, and other residential types allow for **2-family and multi-family housing structures**. A significant challenge lies in the distribution of its zoning categories, with very little land available for housing types other than single-family.

Work is being done to clarify the character of Covington’s “mixed-use” zoning categories. Currently, buildings in these zones are mostly only used for commercial purposes, with limited co-location of housing and retail. Zoning and building codes do not align, making it difficult for any true mix of uses to be achieved. Other developments have skirted this confusion by enacting overlay districts.”

-Georgia Conservancy
Proposed Zoning (Ordinance 16.16.010) At and Around Site

Proposed: NM Neighborhood Mixed-Use District

NM, Neighborhood Mixed-Use District:
Intended primarily for mixed-use development and related uses at a lower density. This district provides a location for residences and convenient goods and services directly adjacent to single-family neighborhoods that will satisfy the common and frequent needs of the residents of nearby residential neighborhoods with design standards and design parameters to encourage a pedestrian-friendly traditional urban form, oriented to pedestrians, which will limit the conflicts between vehicles and pedestrians.

Commercial / Office Zoned

“Newton is taking strides to alter what zoning types are possible to better reflect the needs and preferences of its residents.”

- Georgia Conservancy
PROPOSED RE-ZONING & PHASING

EXISTING: Commercial / Office District
- Low density
- Oriented to vehicles
- For business enterprise activities to be conducted for profit

PROPOSED: NM Neighborhood Mixed-Use District
- Low density
- Oriented to pedestrians
- For residences, convenient goods, and services directly adjacent to single-family neighborhoods

5-YEAR BUILD-OUT:
- IMMEDIATE CONNECTIONS

PHASE 1:
- MAIN STREET ECONOMIES

PHASE 2:
- CREEK PARK + SQUARES

PHASE 3:
- EDGE CONDITIONS
GDOT Traffic Count Station Data
Vehicles per day (vpd) at Intersection and Site

Signal Services
~53,200 vpd

Data and Image from GDOT's TADA Count Station Map
GDOT Traffic Count Station Data
Movement Distributions at Intersection and Site

Data and Image from GDOT's TADA Count Station Map
GDOT Traffic Count Station Data
Heaviest Movements at Intersection and Site

Data and Image from GDOT’s TADA Count Station Map
High Volume Turns at Intersection

NB-Right
WB-Left

Existing
High Volume Turns at Intersection and in to/out of Site

NB-Right
WB-Left
EB-Right
SB-U-Turn
Minor Volume Turns
That can’t be made into the Site from the Signalized Intersection

SB-Thru
WB-Left
EB-Right

Acknowledge Existing NB-Left Storage Length Constraint
Find Best Usage of Existing Capacity and LOS (level-of-service)
Avoid CVS ROW Acquisition
Factor in Safety Measures – Opposing Left/Thru Movements
Avoid new Signal Timing Rescheduling / Signal Warrants
Mitigate Worsened Control Delays when at Signal
Avoid unnecessary Gap Time delays at unsignalized intersections

No New Left Turn Lane!
Entering Volumes To Site from Adjacent Intersections

- NB-Right
- EB-Right
- WB-Left

Existing

Proposed

Redistributed Movements
Exiting Volumes
From Site
to Adjacent Intersections

Proposed
Traffic Controls
At and Around Site – 5-Year Plan

**Install New:**
1. 10’ Apron for NB U-Turns going South
2. WB-Left RCUT median
3. WB-Left RCUT storage lane and median
4. Pedestrian HAWK Signal
5. EB Receiving Lane – East of Site onward
6. ¾ Access Driveway – McDonald’s
7. ¾ Access Driveway – Site

**Maintain Existing:**
8. Traffic Signal
9. Intersection Geometries
10. RIRO

**Speed Limit** 45 MPH

RIRO = Right-in-Right-Out
RCUT = Restricted Crossing U-Turn
Proposed Traffic Controls
At and Around Site – 5-Year Plan

Install New:
1. 10’ Apron for NB U-Turns going South
2. WB-Left RCUT median
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Maintain Existing:
8. Traffic Signal
9. Intersection Geometries
10. RIRO

RIRO = Right-in-Right-Out
RCUT = Restricted Crossing U-Turn

Reduce Posted
45 MPH Speed

To a Posted 25
MPH Speed
Proposed Signage
Along Site Perimeter – 5-Year Plan

- Traffic Signal
- HAWK Signal
- YIELD Sign

Posted 25 MPH Speed
GDOT Standards
At and Around Site – 5-Year Plan

Reduce Posted
45 MPH Speed
To a Posted 25
MPH Speed
Reduce Posted 45 MPH Speed
To a Posted 25 MPH Speed
Reduce Posted 45 MPH Speed To a Posted 25 MPH Speed
GDOT Standards – Right Turn Lanes
At and Around Site – 5-Year Plan

Reduce Posted 45 MPH Speed
To a Posted 25 MPH Speed
Reduce Posted 45 MPH Speed
To a Posted 25 MPH Speed
We hope our speculations can help spark useful conversations about how to re-localize small town, suburban intersections dominated by auto-oriented franchises so as to better serve the residents of Covington and Newton County as well as other communities in the future.

We would like to thank the many individuals and organizations who helped us along the way: Shamica Tucker at the Housing Authority of the City of Covington, Shena Applewhaite with the Newton County Development Services, and Katherine Moore and Nick Johnson at the Georgia Conservancy.

Kay Sibetta with AARP Georgia and three volunteers provided priceless input on the students’ ideas for intergenerational living – shown here on our last in-person class meeting before the pandemic forced us to meet online.

Additional critics that we’re extremely grateful to include Marco Ancheita, Richard Dagenhart, Victor Dover, Peter Dreier, Paul Knight, Joel Mann, Vernelle Noel, Lew Oliver, Brian O’Looney, Haythem Shatta, and June Williamson. And a special shout out to John Anderson and Randy Vinson who encouraged us to be super practical and super visionary throughout the project.
The city of Covington is located on land that belonged to the Creek Indian Nation until January of 1821, when the Treaty of Indian Springs ceded the land from the Creeks to the United States.

After a few transfers of properties, the Justices of the Inferior Court selected the property for the seat of the Newton County government.

The place was named Newtonsborough which was changed to Covington when the city was incorporated on December 8, 1822. The town was named for Leonard Covington, a hero of the War of 1812.
The 1880s brought a lot of for the physical development of the commercial district. The downtown business district is characterized by its high number of Victorian styled commercial buildings, which were popular at the turn of the century.

The town continued to prosper and grow with the founding of Porterdale Mills in 1890, and Covington Mills in 1901, which proved to be significant factors in the economic development of Covington and Newton County. The mills operated successfully until the 1960s, when they eventually closed.

With these new industries, Covington’s residential development expanded into what is now called North Covington. Many of the workers’ homes are still present in the area.
In 1952, the community experienced a major change when U.S. Highway 278 was constructed just south of the Georgia Railroad dividing the city. Next, was the construction of Interstate 20, which provided industry access to a major transportation corridor and a connection to Atlanta.

Covington has been featured in television shows and movies and nicknamed “Hollywood of the South.” Strong economic growth and prosperity has continued in Covington during recent years, owing to increase in a significant corporate presence.

In the first half of the 20th century, the town paved the sidewalks and the streets, thus spurring an increase in residential development of homes in North Covington. Victorian architecture, especially the Queen Anne style, was popular in this period and many of the residences still remain, today.

https://cityofcovington.org/ckeditorfiles/files/City%20of%20Covington%20Historic%20District%20Design%20Guidelines%20FINAL.pdf
<table>
<thead>
<tr>
<th></th>
<th>POPULATION</th>
<th>MEDIAN AGE</th>
<th>MEDIAN PROPERTY VALUE</th>
<th>POVERTY RATE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COVINGTON, GA</strong></td>
<td>13,728</td>
<td>34.7</td>
<td>128,300</td>
<td>29.9%</td>
</tr>
<tr>
<td></td>
<td>0.446% growth</td>
<td></td>
<td>11.4% growth</td>
<td></td>
</tr>
<tr>
<td><strong>ATLANTA, GA</strong></td>
<td>498,073</td>
<td>33.2</td>
<td>302,200</td>
<td>22.4%</td>
</tr>
<tr>
<td></td>
<td>2.42% growth</td>
<td></td>
<td>0.935% growth</td>
<td></td>
</tr>
</tbody>
</table>
**Sex Ratio**

- Male: 46.75%
- Female: 53.25%

**Race and Ethnicity**

- White: 49.3%
- Black: 48.0%
- Asian: 5.8%
- Two or more races: 1.3%

**Over 25 Education**

- Less than 9th grade: 3.9%
- High School Grad: 32.4%
- Some College: 24.9%
- 9th to 12th grade: 13.2%
- Associates Degree: 5.8%
- Graduate Degree: 8.3%

**Household Types**

- Non Family: 33.7%
- Married: 31.0%
- Male: 8.3%
- Female: 27.1%
- Population growth in all age ranges
- Particular growth in ages 25-30

https://opb.georgia.gov/population-projections-visualization
Median Household Income

$39,959  21.9%

2017 VALUE  1 YEAR GROWTH

Wages

Data provided by the Census Bureau
ACS 5-year Estimate.
JOBS + ECONOMY

5.74k
2017 EMPLOYEES

7.25%
1 YEAR GROWTH

4.1%
UNEMPLOYMENT

Compared to 3% in Newtown County

Data provided by the Census Bureau
ACS 5-year Estimate.
Data provided by the Census Bureau ACS 5-year Estimate.

**JOBS + ECONOMY**

**Poverty by Age + Gender**

**Females 25-34**

LARGEST DEMOGRAPHIC LIVING IN POVERTY

**Poverty by Race or Ethnicity**

1. **Black** ~2,652
2. **White** ~1,172
3. **Hispanic** ~211
REAL ESTATE TRENDS

Under Construction
IN COVINGTON

Deliveries + Demolitions
IN COVINGTON

Source: Costar Analytics: Covington
HOUSEHOLD STATISTICS

AVG. FAMILY SIZE: 3.11
AVG. HOUSEHOLD SIZE: 2.57

2017 HOMEOWNERSHIP

UNITED STATES: 64.8%
COVINGTON: 40.8%

HOUSING TYPES - 1800s

GABLE ELL COTTAGE (1875-1915)
- T-or-L-shaped plan; roof is usually gabled. Gable-front at one end of a recessed wing parallel to the façade.

QUEEN ANNE COTTAGE (1880-1890)
- Square mass with projecting gables on front and side. Roof is either pyramidal or hipped with interior chimneys.

RANCH HOUSE 1950s
- Bedrooms are clustered at one end, the principal entry and living spaces near the center, and the garage or carport at the other end.

NEW SOUTH COTTAGE (1890-1920)
- Has a central square mass, usually with a hipped roof and gabled projections. Strong emphasis on symmetry.

https://cityofcovington.org/ckeditorfiles/files/City%20of%20Covington%20Historic%20District%20Design%20Guidelines%20FINAL.pdf
HOUSING TYPES - 1900s

**DOUBLE SHOTGUN** (1700s-1800s)
Two-family dwelling created by placing two shotgun houses side by side, with no openings in the party wall.

**SAND HILLS COTTAGE** (1870-1920)
One-story house on a raised basement. Roof is usually gabled. Prominent flight of stairs to the front entry.

**SHOTGUN HOUSE (1870-1920)**
One room wide and two or more rooms deep, usually three. Roofs are typically gabled or hipped.

**QUEEN ANNE HOUSE** (1880-1890)
Square mass with projecting gables on front and side. Two-story version of the Queen Anne Cottage is the Queen Anne House.

https://cityofcovington.org/ckeditorfiles/files/City%20of%20Covington%20Historic%20District%20Design%20Guidelines%20FINAL.pdf
HOUSING TYPES - 2000s

Average rent in Covington
1BHK: $836
2BHK: $952

Average rent in Atlanta
1BHK: $1391
2BHK: $1,747

6 bed 2 bath
Built in 1999
$258,000

4 bed 3 bath
Built in 2001
$234,900
HOUSING TYPES - 2000s

8 bed 5 bath
Built in 2007
$330,000

4 bed 3 bath
Built in 2019
$248,490

https://www.trulia.com/GA/Covington/
TRANSPORTATION

MOST COMMON METHOD OF TRAVEL

1. Drove Alone 77.9%
2. Carpoled 13.4%
3. Worked at Home 4.59%

Avg. Speed 46.5 mph
Avg. Speed 44.4 mph

Source: [Website](http://www.dot.ga.gov/DS/Data)
Source: [Website](https://www.census.gov/programs-surveys/acs)

2 CARS per household

[Link](https://www.census.gov/programs-surveys/acs/)
TRANSPORTATION

WALK SCORE
36/100

BIKE SCORE
28/100

TRANSIT SCORE
N/A

Amenities within Walking Distance

https://www.walkscore.com/score/10267-georgia-36-covington-ga-30014
The temperature is almost average in comparison to the national data.
CLIMATE DATA: Precipitation

Rainfall here is higher than the national average.
The city of Covington has called for a company to **shut down its local medical sterilization plant** until it can reduce its emissions of a cancer-causing gas.

A preliminary data from air pollution testing found ethylene oxide levels that were particularly high in two neighborhoods close to the BD sterilizing plant in Covington. Georgia Attorney General Chris Carr filed a motion Monday for a temporary restraining order against Becton Dickinson, or BD, which sterilizes medical equipment at a plant in Covington.

<table>
<thead>
<tr>
<th>Air quality Index</th>
<th>Ozone Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covington</td>
<td>68.3</td>
</tr>
<tr>
<td>US</td>
<td>74.2</td>
</tr>
</tbody>
</table>

**Ethylene Oxide Levels**

- 0.5 - 15.3 per m³ of air
- 0.2 per m³ of air (normal levels)
Sustainable Newton is grassroots, community-based charitable organization created in 2018 to connect people & resources to better understand & effectively respond to sustainability challenges & opportunities in our community -- which is Newton County, Georgia.

Supports approaches that recognize the critical need to balance people, planet, and profit in every important decision.
COVINGTON CENTRAL PARK: Proposal

- Totals **126 acres**
- **~7 minute drive** from site
- Proposed Amenities include:
  - Disc golf course
  - Residential Area
  - Hiking/Walk Trails
  - Mountain bike trail
  - Soccer field
  - Playgrounds
  - Botanical Garden
  - Skatepark
  - Restrooms

42% of population is obese

32% of population have ever tried to lose weight.

15% of population do any vigorous-intensity sports, fitness or recreational activities for at least 10 minutes continuously.

31% walk or bicycle for at least 10 minutes continuously to get to and from places.

http://www.city-data.com/health-nutrition/Covington-Georgia.html
28% of population 18 years old and older have usually little interest or pleasure in doing things.

28% of population often feel down, depressed, or hopeless.

31% of population are bothered by poor appetite or overeating.

5% of population have suicidal thoughts.

http://www.city-data.com/health-nutrition/Covington-Georgia.html
### HEALTH DATA: Old Age

<table>
<thead>
<tr>
<th>Health Condition</th>
<th>Covington</th>
<th>Newton County</th>
<th>Georgia</th>
</tr>
</thead>
<tbody>
<tr>
<td>23% of population 60 years and older have difficulties in thinking or remembering that can make a big difference in everyday activities.</td>
<td>22.7%</td>
<td>23.0%</td>
<td>20.6%</td>
</tr>
<tr>
<td>22% of population have ever been told by a doctor or other health professional that their blood cholesterol level was high.</td>
<td>21.7%</td>
<td>18.2%</td>
<td>17.3%</td>
</tr>
<tr>
<td>13% of population have ever been told by a doctor or health professional that they have diabetes.</td>
<td>12.7%</td>
<td>10.1%</td>
<td>9.9%</td>
</tr>
<tr>
<td>12% of population have difficulty walking without using any special equipment.</td>
<td>12.2%</td>
<td>9.9%</td>
<td>8.8%</td>
</tr>
</tbody>
</table>

14% SENIORS IN EXISTING POPULATION

- Site is approx 1 mile from 2 senior living facilities
- Site is also adjacent to childcare centers and schools
MISSING MIDDLE HOUSING PRECEDENTS

COTTAGES ON GREENE
EAST GREENWICH, RI

- 15 Units of mixed-income condominiums organized into a compact cottage court development
- Building types include free-standing single units, duplexes, and a 3-unit townhouse structure
- Bio-swales and rain gardens have been used not only as stormwater management, but as landscape elements

http://unionstudioarch.com/projects/cottages-on-greene/
MISSING MIDDLE HOUSING PRECEDENTS

PETTAWAY POCKET NEIGHBORHOOD
LITTLE ROCK, AR

- Cluster of houses around shared outdoor commons and infrastructure
- Urban market housing at construction costs of $100,000/unit
- Capitalizes on smaller home footprints with shared amenities like a community lawn, playground, and stormwater management infrastructure

http://uacdc.uark.edu/work/pettaway-pocket-neighborhood
SENIOR/INTERGENERATIONAL PRECEDENTS

LA STATION
Nun’s Island, Verdun, Quebec

- Originally a modernist gas station by Mies Van der Rohe, built in 1969.
- Adaptively reused into an Intergenerational community center since 2012.
- There are two distinct glass volumes; one housing seniors’ activities, while the other is designated for the younger set.

Senior/Intergenerational Precedents

PDX Commons
Portland, Oregon

- Urban cohousing condominium development
- There are 27 units (1, 2 and 3 bedrooms) ranging from 650-1250 square feet.
- Condos surrounding enclosed garden courtyard and common house
- The units and building are designed for age-in-place and age-in-community

http://unionstudioarch.com/projects/cottages-on-greene/
AUTONOMOUS VEHICLES

+ High traffic count at our intersection
+ # of accidents
+ Potential sustainable initiative

+ Lack of pedestrian infrastructure leads to a more sedentary lifestyle
+ Mental and physical health problems higher than national average
+ Increasing aging population

---

LONELINESS EPIDEMIC

+ Lack of accessibility to recreation
+ Mental health problems higher than national average
+ Missing communal spaces

+ Increasing aging population
+ Lack of accessible recreation
+ A population with difficulty walking without using any special equipment

---

Why are these themes relevant to Covington?

HEALTH

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AGING
REFERENCES searched 1/2020

- https://www.cityofcovington.org/
- https://embed.datausa.io/profile/geo/covington-ga/#about
- https://www.neighborhoodscout.com/ga/covington/demographics
- https://opb.georgia.gov/population-projections-visualization
- https://www.bestplaces.net/health/city/georgia/covington
- http://www.dot.ga.gov/DS/Data
- https://www.sustainablenewton.org/about.html
- https://www.trulia.com/GA/Covington/