Technical Assistance to West Virginia, 2020–21

Facilitated by RTI International
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- Data dashboard elements
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West Virginia’s Technical Assistance (TA) Questions

Credentials
- How do states connect industry credentials to postsecondary coursework?
- What are examples of dual enrollment agreements and opportunities for career and technical education (CTE) students?

Rural
- What are examples of systems or structures that effectively support postsecondary credential attainment and employment outcomes in rural areas?
- What are innovative strategies to support programs of study in rural areas?

Data
- What data do states include in multi-use, cross-sector data dashboards and reports?
- How are cross-sector data dashboards managed and funded?
- How do states report workforce data from sources such as Emsi?
- What are examples of policy-relevant reporting techniques?
**TA Roadmap**

**Explore**
- Examine practices in other states
- Select comparable states (e.g., Kentucky, Tennessee, Virginia)

**Learn**
- Understand promising state strategies and processes
- Identify options West Virginia might explore

**Create**
- Inventory of data dashboard examples
- Summary descriptions of policies and infrastructure to support rural CTE student outcomes
Recommendations

- **Advancing credential attainment**: Identify industry-recognized credentials offered at both the secondary and postsecondary levels to initiate conversations about postsecondary credit for credentials. These credentials could be a starting point for the discussion of awarding college credit for prior learning.

- **Enhancing rural capacity**: Support partnerships across rural secondary schools and with postsecondary institutions to maximize resources and encourage efficiency in planning. Thriving partnerships could serve as models and/or provide TA on ways to use technology or other resources.

- **Aligning secondary CTE data and labor market information**: Examine the alignment between CTE program competencies and related occupations to identify the most relevant labor market information to use in program planning. This may involve consulting employers on skills needed for entry-level positions to understand the connection between programs and occupations.

- **Building data system capacity**: Explore funding sources to support data management and analysis beyond the *Strengthening Career and Technical Education for the 21st Century Act*, also known as *Perkins V*. Examples include grants from the U.S. Department of Labor such as Workforce Data Quality Initiative grants.
What Evidence Is There on the Impact of Early College Credit on Postsecondary Degree Attainment?

In a review of the limited evidence on early college credit programs, the What Works Clearinghouse* documented mixed but overall positive effects on postsecondary outcomes such as the following:

<table>
<thead>
<tr>
<th>Matriculation</th>
<th>Credit accumulation</th>
<th>Persistence to degree</th>
<th>Time to degree</th>
</tr>
</thead>
</table>

Example studies include the following:

In Texas, a study of the statewide dual credit program found increased matriculation to college, shorter times to completion, and increased certificate and degree completion rates.

In Colorado, researchers used advanced statistical methods to identify positive effects of the statewide concurrent enrollment program on college matriculation and completion rates.

Connecting Secondary CTE with Postsecondary Credits

Articulation of CTE courses
- Ohio
- Pennsylvania
- Wisconsin
- Washington

Articulation of industry credentials
- Florida
- Tennessee

Articulation of exams
- Kentucky
- Pennsylvania*

*Pennsylvania offers articulation of CTE courses and exams and does not offer articulation of industry credentials.
Deep Dive: Washington

• Washington State has three statewide dual credit programs: Running State, College in the High School, and CTE Dual Credit.

• **The course-based CTE Dual Credit program** offers the option of credit for CTE secondary courses at public two-year postsecondary institutions.
  - Course articulations are a mix of local and statewide articulation agreements.
  - The [Office of Superintendent of Public Instruction](#) reported on recommendations to expand CTE dual credit programs through regional rather than local articulation agreements.

• Some CTE programs of study, such as computer design, include Advanced Placement courses.

• **Equivalency agreements** allow CTE courses to count toward high school courses in core academic fields, such as English or algebra.
Deep Dive: Pennsylvania (slide 1)

• CTE students are eligible for postsecondary credits through the Students Occupationally and Academically Ready (SOAR) program.
  ▪ Students may apply for credits up to three years after graduation.
  ▪ Teachers must sign off for the student to receive credit.
  ▪ To qualify, students must meet four requirements. Students must
    ○ pass an end-of-program assessment, such as a NOCTI exam,
    ○ earn a high school degree with a GPA of 2.5 or higher in technical courses,
    ○ complete an approved secondary CTE program of study, and
    ○ achieve proficiency on all competencies associated with the CTE program of study.

• Students identify the credits they are eligible for using the SOAR search engine.
• Students may also search for exam equivalencies using a separate search engine.
• Articulation agreements for SOAR and specific exams are individual to each institution (see next slide for more details on how agreements are managed).
Deep Dive: Pennsylvania (slide 2)

• Over 10 years ago, the Pennsylvania Transfer and Articulation Center (PA TRAC) was developed through legislation to manage a database of statewide transfer and articulation agreements.

• PA TRAC is led by an oversight committee made up of educators at participating institutions and state education agency staff.
  ▪ Program articulation committees at participating institutions are responsible for updating their state profile and agreements located in the student-facing SOAR database.
  ▪ The statewide transfer credit framework and equivalency standards cover articulation for core subjects at all participating institutions.

• PA TRAC legislation, policies, procedures, and resources are publicly available at https://www.patrac.org/Administrators.
Deep Dive: Kentucky (slide 1)

- **Statewide articulation agreements** are listed on the Kentucky Department of Education (KDE) website by type of assessment, course, and postsecondary institution.
  - Agreements may stipulate a combination of requirements for college credits, such as credit hours completed in a pathway combined with an industry assessment.
  - Agreements may require that the student major in a related field. For example, an ASK Marketing certification articulates to Principles of Marketing credit for all students, while a Microsoft Office Specialist certification only articulates to Computer Applications credit for Business majors.

- Process
  - Secondary staff complete an articulated credit report form to verify student completion, noting type of completion and associated articulation agreement number.
  - Students learn about their eligibility through teachers, counselors, or searching the Kentucky Community and Technical College System website for information on credit for prior learning.
  - Forms are submitted to local postsecondary staff listed as contacts on the agreements.
Deep Dive: Kentucky (slide 2)

- **End-of-program assessments** are developed by KDE through the Kentucky Skill Standards, Assessment, and Certification System.
  - Standards that appear in the system are identified by employers across the state.
  - The system includes performance and training-based assessments that align with employer-recognized standards.

- The KDE works with postsecondary partners to initiate and manage statewide articulation agreements for state-recognized end-of-program assessments.
How Do States Align Industry Credentials with Postsecondary Course Credit?

- **Develop a process to determine priority credentials**
  - Identify criteria to define whether it is valued by industry associations and/or employers.
  - Begin with credentials that are attainable in secondary CTE programs and aligned with competencies in postsecondary programs.

- **Produce a statewide list of credentials separated by whether they are transferrable to postsecondary credit**
  - Florida created tiers for industry credentials. The highest tier credentials are transferrable for credit in an associate degree program.
  - Credentials in Tennessee can only appear on the state’s promoted credential list if they count for postsecondary credit at a technical college.

- **Require proof of credential completion for the student to receive credit**
  - Tennessee has data sharing agreements with all credentialing agencies that offer credentials on the state-approved list.
  - Kentucky asks students to submit copies of their certificates of completion.
### Emerging Strategies to Enhance Rural CTE (slide 1)

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create frameworks for CTE planning at the regional level</td>
<td>Regional career academies (Kentucky)</td>
</tr>
<tr>
<td></td>
<td>Collaborative teams at the region level (Tennessee, Wisconsin)</td>
</tr>
<tr>
<td>Form school-to-school partnerships to increase resource capacity</td>
<td>Technical equipment across districts (Colorado) or secondary-postsecondary institutions (Delaware)</td>
</tr>
<tr>
<td></td>
<td>Instructors and curriculum resources (Nebraska)</td>
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<tr>
<td></td>
<td>Pathway enrollment (Alaska, Nebraska)</td>
</tr>
<tr>
<td>Develop space for rural voices in CTE planning</td>
<td>Nebraska’s ReVision initiative needs assessment</td>
</tr>
<tr>
<td></td>
<td>Colorado’s state-level Rural Education Council</td>
</tr>
</tbody>
</table>
Emerging Strategies to Enhance Rural CTE (slide 2)

**Embed credential opportunities in programs of study**

- College instructors teach postsecondary courses at rural high schools (Ohio)
- Statewide CTE course articulation agreements (Idaho, Ohio, Tennessee)
- State-model pathways that follow quality standards and incorporate credentials (Delaware, Mississippi, Tennessee)

**Leverage non-Perkins funds to support rural program quality**

- Local workforce development grant funds for credentialing and work-based learning (WBL) partnerships (Tennessee)
- State education grants for local education agencies (LEAs) to catalyze local partnerships, targeting rural districts (South Dakota)
• Provide TA on credential attainment to rural school districts (Texas)
• Create educator networks to identify promising practices (Tennessee)
• Develop a competency-based approach to improve student progression and retention in online coursework among rural students (Georgia, North Carolina, South Carolina)
Resource: Advance CTE on the Frontier Series

• Start the conversation with LEAs: Facilitation guide

• Strengthen the rural teacher pipeline
  ▪ Ease credentialing barriers and allow flexible certification opportunities (Kentucky, New Jersey, South Dakota)
  ▪ Offer wages that compete with private sector (Hawai‘i)
  ▪ Develop a grow-your-own pipeline (Mississippi, Tennessee)
  ▪ Create rural teacher training programs (Missouri)
  ▪ Support the needs of veteran rural teachers (Georgia, Louisiana)

• Leverage funding sources for rural CTE initiatives
  ▪ Perkins Reserve Fund grants (Montana)
  ▪ WIOA statewide set-aside (California)
  ▪ Consolidate resources within consortia (Idaho, Nebraska)
  ▪ Every Student Succeeds Act Rural Education Achievement Program (New York)
OCTAE’s Challenge to Expand Rural Technology Programs of Study

• Two years of funding
• Five LEA teams
  (California, Kentucky, Michigan, Texas, Virginia)
• Culminates in a guide on insights and innovative practices

https://www.ruraltechproject.com/
How Do States Use Reporting to Inform Policy?

• Utilize state longitudinal data
  ▪ Rhode Island’s data stories are geared toward policy and programmatic planning.
  ▪ Maryland’s Longitudinal Data System Center develops reports on topics such as the impact of CTE on outcomes.
  ▪ Nebraska’s Research and Evaluation team conducts research studies on topics such as the links between Advanced Placement, dual credit, and college enrollment.
  ▪ Florida posts public quarterly and annual reports using longitudinal data system outputs to meet statutory requirements and offers researchers the opportunity to apply for data use.

• Present findings to state legislature
  ▪ Washington reports on completion of CTE course equivalencies and enrollment in dual credit courses.
  ▪ Illinois and Arkansas deliver annual reports of CTE performance data.
Rhode Island’s DataHub reports “data stories” using analyses of longitudinal data systems. Examples include workforce outcomes for health graduates and evaluations of the state’s workforce pipeline.

The DataHub is maintained by DataSpark and housed at the University of Rhode Island.
The Rhode Island DataHub also offers a Talent Dashboard with real-time metrics and longitudinal data connecting education and workforce outcomes.
Virginia’s longitudinal data system website shares policymaker- and practitioner-facing reports.

- Data system managers in the community college system develop Insight Reports summarizing key findings and proven practices.
- Virginia posts reports created by individual agencies using the shared data system.
Florida requires quarterly and annual reporting from the state longitudinal data system.

- Annual reports on degree and nondegree graduates highlight progress toward workforce pipeline goals.
- Other reports summarize district- and college-level outcomes.
How Do States Fund Data Exploration Projects?

• Many states use grants from the Workforce Data Quality Initiative (WDQI).
  ▪ WDQI is a collaborative partnership between the U.S. Departments of Labor and of Education.
  ▪ Since 2010, WDQI grants (averaging $1M in value over three years) have been awarded to state workforce agencies and education systems.
    ○ West Virginia has never received a WDQI grant (see recipient map).
  ▪ Grants support enhancements to connect longitudinal education data with workforce and employment data.
    ○ The most recent application cycle closed in April.

• Example projects supported by WDQI grants:
  ▪ Iowa community college dashboard with workforce outcomes
  ▪ Kentucky interactive workforce health dashboard
  ▪ MaineEarns interactive tools
  ▪ Mississippi annual economy scorecard
  ▪ Rhode Island Talent Dashboard
Linking Workforce Data with CTE Programs

• Commonly, states link CTE programs to workforce data using a crosswalk between Classification of Instructional Programs (CIP) and Standard Occupational Classifications (SOC), such as the crosswalk provided by the National Center for Education Statistics and U.S. Bureau of Labor Statistics.
  - Examples include labor market reports from Arizona, Maryland, and Texas (examples later in this section).

• Emsi provides a customizable CIP-to-SOC crosswalk to more closely link CIP codes with occupations that are the primary focus of a CTE program.
  - Allows users to add links to occupations that they determine to be relevant to a CTE program (or remove occupations that are not).
  - Users within an organization can collaborate on shared custom program / labor market map.
Deep Dive: Texas

The Texas Education Agency (TEA) adopted a three-step process to link CTE programs with relevant statewide* occupation data:

1. **TEA uses the U.S. Bureau of Labor Statistics’ CIP-to-SOC crosswalk to map high-wage and in-demand (HWID) occupations and CTE programs.**
   - HWID jobs are at the state level as a minimum 17% median growth rate and $35,000 median annual wages.

2. **For unmatched programs, TEA repeats the CIP-to-SOC match to identify non-HWID occupations using labor market information and input from industry advisory boards.**
   - TEA aligns programs with non-HWID occupations if they serve as entry points to careers with family-wage earning potential, that are in strong demand, and/or are for high school graduates (e.g., police officers, medical assistants).

3. **TEA consults with industry advisory boards to review occupational skills against CTE program competencies for all linked occupations.**
   - TEA developed the Calibrate’s SkillsEngine to match course and program competencies with occupation skills.

   In Texas’ SkillsEngine, occupational skills are identified using O*NET job descriptions and refined using input from Texas employers. Occupations with skills well matched with a program of study are added to the program’s list of related occupations for future program alignment.

*TEA developed an application process for regions to advocate for additional programs of study aligned with locally relevant occupations and workforce needs (e.g., aviation, maritime, cosmetology).
Connecting LEAs to Workforce Data for the Comprehensive Local Needs Assessment (CLNA)

**Two common approaches:**
- Prepare data reports for LEAs (e.g., Arizona, Maryland, North Dakota).
- Identify/prioritize data sources for LEAs (e.g., Colorado, Texas).

**The levels at which data are reported varies across states:**
- By occupation (e.g., North Dakota).
- By program or CIP code (e.g., Arizona, Maryland).
- Both (e.g., Texas reports multiple occupations per CIP code).

**States provide (or point to) similar data points:**
- Total number of jobs (current)
- Total number of jobs (projected)
- Annual job openings
- % change in number of jobs
- Earnings
Preparing Reports for Local Providers: North Dakota

• **Format**: Dashboard (Microsoft Power BI)

• **Data source**: Job Service North Dakota Labor Market Information Center

• **At-a-glance**: Provides historical job openings data at the state, regional, and county levels
  - Part of [Insights.ND.gov](https://Insights.ND.gov), the state’s longitudinal data system portal
  - Includes data from multiple agencies
  - Website and data system are managed and maintained by the state’s IT Department

• Part of a larger dashboard that presents state longitudinal data system (SLDS) data
  - Managed by the state’s IT Department
  - Funded from the general fund and the U.S. Department of Education’s SLDS Grant Program
Identifying/Prioritizing Data for Local Providers: Texas

- **Format**: Excel tables (statewide and regional data)
- **Data source**: Texas Workforce Commission (state/federal data)
- **At a glance**: Demonstrates job growth and median annual wage for occupations aligned to a CTE program of study

### Panhandle Workforce Development Area (1) Labor Market Information, 2016 - 2026

<table>
<thead>
<tr>
<th>State Career Cluster</th>
<th>Program of Study</th>
<th>SOC</th>
<th>Occupational Title</th>
<th>Growth Rate</th>
<th>Median Annual Wage 2018</th>
<th>Growth Wage Category</th>
<th>Annual Average Employment 2016</th>
<th>Annual Average Employment 2026</th>
<th>Total Annual Openings</th>
<th>Competitive Education Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Science</td>
<td>Nursing Science</td>
<td>29-1171</td>
<td>Nurse Practitioners</td>
<td>30%</td>
<td>$110,474</td>
<td>HIGH/HIGH</td>
<td>102</td>
<td>133</td>
<td>8</td>
<td>Master's degree</td>
</tr>
<tr>
<td>Health Science</td>
<td>Medical Therapy</td>
<td>31-2021</td>
<td>Physical Therapist Assistants</td>
<td>29%</td>
<td>$64,777</td>
<td>HIGH/HIGH</td>
<td>173</td>
<td>223</td>
<td>29</td>
<td>Associate's degree</td>
</tr>
<tr>
<td>Health Science</td>
<td>Healthcare Therapeutic, Medical</td>
<td>31-2011</td>
<td>Occupational Therapy Assistants</td>
<td>26%</td>
<td>$60,737</td>
<td>HIGH/HIGH</td>
<td>50</td>
<td>63</td>
<td>8</td>
<td>Associate's degree</td>
</tr>
<tr>
<td>Health Science</td>
<td>Medical Therapy</td>
<td>29-1126</td>
<td>Respiratory Therapists</td>
<td>23%</td>
<td>$51,336</td>
<td>HIGH/HIGH</td>
<td>229</td>
<td>281</td>
<td>17</td>
<td>Associate's degree</td>
</tr>
</tbody>
</table>
How Do Local Providers Leverage Emsi Data?

**McLennan Community College**
- Emsi data used to assess labor market demand during CLNA process
  - Data points
    - Demographic data by county within the college’s service area
    - Number of current and project jobs in college district by subsector
  - Application
    - Comparisons of annual completions to annual job openings, by program and aligned occupations (CIP-to-SOC map)

**Student Opportunity Center (a private company that provides a hub for WBL)**
- Emsi data used to identify internships across a variety of industries
  - Data points
    - Job openings (including internship opportunities)
  - Application
    - To supplement information on volunteering, events, research projects, and study abroad on the experiential learning platform
What Elements Do States Include in Multi-use Dashboards?
## Linking Data to Inform Program Improvement

<table>
<thead>
<tr>
<th>Use</th>
<th>Data source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify gaps and barriers in program delivery across schools and regions</td>
<td>• Secondary and postsecondary CTE data by school and program of study&lt;br&gt;• Transportation data from state transportation department (public transit routes, transit corridors)&lt;br&gt;• Labor market information</td>
</tr>
<tr>
<td>Understand career readiness across students</td>
<td>• Industry certification, technical skill assessments, and other skill attainment measures by school and program of study&lt;br&gt;• Workforce placement data (wages, industry, activities)</td>
</tr>
<tr>
<td>Monitor participation rates and access by special populations</td>
<td>• Secondary and postsecondary CTE data by school and program of study&lt;br&gt;• Census/American Community Survey data (race/ethnicity, income and wages, workforce participation)&lt;br&gt;• Centers for Disease Control and Prevention Social Vulnerability Index&lt;br&gt;• U.S. Department of Housing and Urban Development Access to Opportunity Index or Jobs Proximity Index&lt;br&gt;• Economic Innovation Group’s Distressed Communities Index</td>
</tr>
<tr>
<td>Inform the content of professional development</td>
<td>• Secondary and postsecondary CTE data by school and program of study&lt;br&gt;• Industry certification, technical skill assessments, and other skill attainment measures by school and program of study&lt;br&gt;• Workforce placement data (wages, industry, activities)</td>
</tr>
</tbody>
</table>
## Linking Data to Understand the Workforce Pipeline

<table>
<thead>
<tr>
<th>Use</th>
<th>Data source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Match talent pipeline needs of business and industry</td>
<td>• Business data from state labor agency (NAICS code, location, size)</td>
</tr>
<tr>
<td></td>
<td>• Economic development data from state labor or economic development agency (regional industry needs)</td>
</tr>
<tr>
<td></td>
<td>• WBL placement data (wages, industry, activities)</td>
</tr>
<tr>
<td>Share graduating student capabilities with local and state stakeholders</td>
<td>• Secondary and postsecondary CTE data by school and program of study</td>
</tr>
<tr>
<td></td>
<td>• Industry certification, technical skill assessments, and other skill attainment measures by school and program of study</td>
</tr>
<tr>
<td></td>
<td>• WBL completion data (industry, activities)</td>
</tr>
</tbody>
</table>
Examples of User-friendly CTE Data Dashboards
The **Tennessee Career Pathways Dashboard** allows users to explore postsecondary credentials by career cluster, pathway, region, and district.
Kentucky’s annual **High School Feedback Reports** and **CTE Feedback Reports** include data on student debt and employment status. The state also publishes a **Future Skills Report** to show industry needs and data on workforce pipelines.
At the postsecondary level, the Kentucky Community & Technical College System developed an Occupational Wage and Demand Matrix to highlight talent pipeline gaps for use in program planning.
Florida compares earnings data by education level and wage thresholds.

The chart shows earnings for different education levels in comparison to high skill/high wage threshold and minimum wage.

- **High Skill / High Wage Threshold**: $46,904
- **Minimum Wage**: $17,160

Education levels from lowest to highest include:
- H.S. Graduates
- District SEC
- District PS AV
- FCS PS AV
- FCS PSVC
- FCS AS Degree
- FCS AAS Degree
- FCS AA Degree
- FCS Bachelor's Degree
- SUS Bachelor's Degree
- SUS Master's Degree
- SUS Doctorate Degree
- ICUF Bachelor's Degree
- ICUF Master's Degree
- ICUF Doctorate Degree

The chart illustrates that earnings generally increase with higher education levels, surpassing both thresholds.
Examples of Dashboards Integrating Emsi Data
## Examples of Workforce Data Integration in Dashboards

<table>
<thead>
<tr>
<th>Feature</th>
<th>Examples</th>
</tr>
</thead>
</table>
| Uses Emsi data | Hawai‘i Career Explorer (Hawai‘i)  
Labor market data for CLNA (Texas)  
Internships/Experiential Learning (Student Opportunity Center) |
| Built in Tableau | Education Research & Data Center (Washington)  
NCII Guided Pathways (Maricopa Community Colleges)  
Butte College Student Equity Data (Northern California)  
San Diego & Imperial Career Pathways (Southern California) |
| Cross-agency collaboration | Hawai‘i Career Explorer (Hawai‘i)  
Education Research & Data Center (Washington) |
Tableau Dashboards: Washington State Longitudinal Data System

Key points
- Uses Emsi data
- Built in Tableau
- Cross-agency collaboration

Overview
Collection of Tableau dashboards that present cross-agency data on topics ranging from juvenile justice to postsecondary graduate outcomes

Data points*
- After high school graduation:
  - Postsecondary enrollment (within one year)
  - Retention (after one year of postsecondary)
  - Completion (within eight years of high school exit)
  - Median earnings (within 12 years)

Data filters*
- Programs (e.g., free and reduced-price lunch, Section 504)
- Gender
- Race/ethnicity
- GPA

Visit the website

*Data points/filters for the High School Graduates Outcomes dashboard are provided as an example.
Tableau Dashboards: Maricopa Community Colleges NCII Guided Pathways

Key points
- Uses Emsi data
- Built in Tableau
- Cross-agency collaboration

Overview
Postsecondary student performance dashboard

Data points
- Enrollment
- Next-term persistence rate
- Credit attainment in first term
- Credit attainment in first year
- College-level course completion
- College-level hours
- College readiness
- College-level math and English

Contributing agencies
- Maricopa Community Colleges

Filters
- Age
- Race/ethnicity
- Gender
- Full time / part time
- Degree type
- First-generation status
- Pell eligible

Visit the website
Emsi Data Use: Hawai‘i Career Explorer

**Key points**

- Uses Emsi data
- Built in Tableau
- Cross-agency collaboration

**Overview**

Career exploration tool with information on job openings and career pathways, CTE programs and courses, and credentials. No student data.

**Data points**

- Annual job openings
- Career pathways
  - Coursework
  - Where to earn related credentials
  - Job outlook
- Lifestyle calculator

**Special note**

Uses the Emsi application programming interface (API) to pipe data in directly from Emsi.

**Owner**

- University of Hawai‘i

**Contributing agencies**

- University of Hawai‘i
- Hawai‘i P20

Visit the website