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Tazewell County Cancer Project

A collaborative effort between:

The Tazewell County Board of Supervisors and

Virginia Tech
Center for Public Health
Practice and Research

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Researchers

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- Leigh-Anne Krometis, PhD—Assistant Professor, Department of Biological Systems Engineering
- Sophie Wenzel, MPH—Assistant Director, Center for Public Health Practice and Research
- Shelly Rasnick, MPH, CHES—Wellness Programs and Student Development Coordinator, Recreational Sports
- Jordan Wetzig, BS—Biological Systems Engineering
- Susan W. Marmagas, MPH—Associate Professor and Program Assistant Director, Population Health Sciences

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Background and Study Questions

Community concerns about Cancer Risk in Tazewell County:

- Does Tazewell have a *higher incidence* of cancer when compared to the rest of Virginia?
  - Is there underreporting of cancer in Tazewell County?
- Are there risk factors (behavioral/ environmental) that could increase the cancer risk in Tazewell County?

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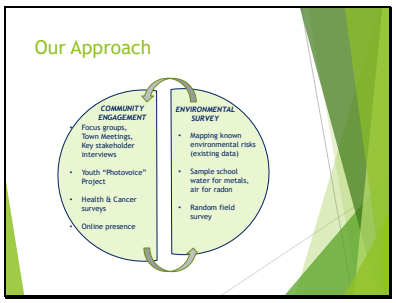

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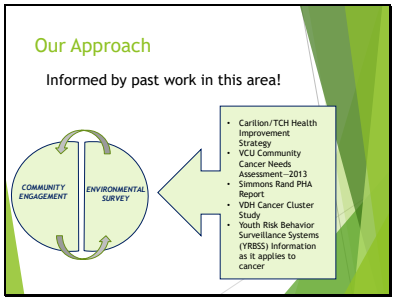

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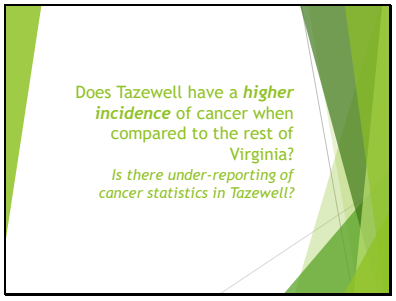

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Review of VDH Cancer Registry Statistics 2003-2012

- No statistical significance was found overall with the following cancers:
  - Brain, Cervix, Hodgkin's Lymphoma, Kidney, Leukemia, Melanoma (Skin), Myeloma, Non-Hodgkin's Lymphoma, Oral, Ovary, Pancreas, Stomach, Liver and Uterus.

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Review of VDH Cancer Registry Statistics 2003-2012

- Statistical differences were found in the following cancers
  - 70-79 year age group:
    - Bladder cancer was significantly lower (overall, no difference).
    - Colorectal cancer was significantly lower (overall, no difference).
  - 40-49 year age group: Testis cancer was significantly lower (overall, no difference).
  - 50-69 year age group: Uterus cancer was *significantly higher* (overall, no difference).

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Review of VDH Cancer Registry Statistics 2003-2012

- Statistical differences were found in the following cancers
  - 40-59 year age group: lung cancer was significantly higher (overall, no difference).
  - Breast cancer was significantly lower in all age groups when compared to the rest of the state.
  - There were 239 "Other" cancers (not on the above list) reported during that time for Tazewell and in the 60-69 age group and the over 80 age group, this rate is *significantly higher*.

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Cancer Patient Survey Findings

- 299 responded—more females than males
- Average cancer patient responding was 57.7 years of age (Those who already died from cancer were excluded from this average)
- Age range 18-86.5 year of age (Those who already died from cancer were excluded from this average)
- Employment place varied
- 55.6% used tobacco before or at the time of diagnosis
- Cancers reported: Lung-15.5%, Colon-9.3%, Prostate-6.7%, Skin-6.6%, Leukemia-5.7%, Pancreatic-5.5%, Unknown or unreported on survey-17.8%

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Cancer Patient Survey Findings

- 41.84% were diagnosed by a specialist, 30.95% by a family doctor, 27.21% by a surgeon
- 44.71% diagnosed in TC, 55.29% were diagnose outside of Tazewell County
  - Other places in Virginia, Regionally in Tennessee, North Carolina, Locally in West Virginia, Kentucky, Texas and Minnesota
- 89% were treatment by an Oncologist
- 85.3% were treated for their cancer
- 18.75% treated in Tazewell County—81.43% went outside the county
- 94.5% reported that they knew at least one other person in Tazewell with Cancer

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Are there **risk factors** (behavioral/ environmental) that could increase the cancer risk in Tazewell County?

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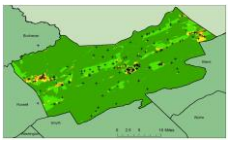
Mapping Survey Respondents



No immediate "clusters" were apparent from the data; the cases appear uniformly distributed across the higher population areas of the county.

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Water Testing Schools

- Public Schools
  - Two sampling trips: Summer 2015 and December 2015
  - 3-4 points at all 17 schools (kitchen tap, water fountains)
  - Few violations of maximum contaminant levels were found:
    - Two samples THS & TCTC were positive for coliform (not *E. coli*) — minimal concern and not related to cancer
    - Water fountain at TCTC found to exceed limits for copper—minimal concern; not related to cancer
    - Eight schools tested positive for lead but this was during the summer when taps were not being flushed. Re-testing indicated that two taps at TCTC need to be replaced just to be safe. This does not present a cancer risk. Lead is generally related to neurological issues. The solutions are a simple fix.

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Water Testing Homes and Public Buildings

- Water Samples collected from 26 private homes and 5 public buildings
- All sources of water are public (no wells)
- One source tested positive for coliform but otherwise, all samples were with acceptable levels of the Safe Drinking Water Act
  - No significant levels of metals or contaminants were found
- 1/3 of the county gets water from wells, springs and cisterns
  - Past work suggests greatest risk for *E. coli* and gastrointestinal illnesses (Non-carcinogen)

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Radon Testing
Private Homes & Public Buildings

- Members of the BOS accompanied researchers to homes to place the kits
  - 26 homes; Tazewell, N Tazewell, Jewell Ridge, Richlands, Bluefield, Pocahontas
  - Kits were collected a week later and sent to the testing lab
  - Results were sent to the homeowner and to VT
    - 6 homes were in the high range (Above 4.0 pCi/L)
      - Mitigation is necessary
    - 2 homes were in the medium range (between 2-4 pCi/L)
      - Mitigation is recommended
  - More wide-spread testing across the county is recommended
  - *Radon is the second leading cause of Lung Cancer* (tobacco is first)
  - We will conduct a second round of radon testing in the county.

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Radon Testing
Schools

- Short-Term (3-7 days) kits were places in five schools July 2015
  - Results were compared with VDH testing from the 1990s
- No elevated levels were found in these schools
  - Consistent with the earlier testing
- Since Radon levels don't change much over time, further testing is not necessary.

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Risk Factors: Representative Survey

- 169 returned survey—equal number of men and women--largest age group was 60-70 years (32%), 50-60 age group (19%), 70-80 age group (17), 20-30 age group (2%)
  - Average age responding was 63.
- Smoking weekly-10%, Smoking daily-<1%, Former smokers-45%, Not smoked in the past 5 years-42%
  - Virginia--Highest smoking rates 18-24 age group (19.4%), Lowest smoking rates in the 65 and older age group (9.3%)
- 82% reported not drinking
- 71% ate 0-1 servings of fruits and vegetables each day (Virginia 1.7 servings)
- 34% no daily exercise (Virginia 22.5%)
- 97% have health insurance
- 59% saw a healthcare provider 0-5 time in the past 12 months, 24% saw one 5-10 time in the past 12 months
  - Treatments delayed because: cost, appointments hard to get, long wait times.

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Risk Factors: Representative Survey (Environment)

- Roughly 2/3 of the county is dependent on municipal/city water
- Majority of respondents were nonsmokers (84%), though roughly a third of these respondents had been smokers previously (i.e. had quit in past five years)
- 88% had never tested for radon
- No common workplace exposure identified

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Youth Risk Behavior Surveillance System

	Survey Prompt, e.g. "I have…"	Percent of students who responded "YES"	
		Tazewell Middle	Tazewell High
Alcohol Use	Had at least one drink of alcohol on one or more of the past 30 days	11.9	37
	Had five or more drinks of alcohol in a row on one or more of the past 30 days	NR	26.2
Sexual Behavior	Had sexual intercourse	22.7	50.7
	Had sexual intercourse for the first time before age 13	16.7	11.7
	Had sexual intercourse with four or more people during their life	3.5	14.6
	Had sexual intercourse during the past 3 months	NR	33.3
Smoking	Tried cigarette smoking	24.7	52
	Smoked a whole cigarette for the first time before age 13	14.4	19.1
	Smoked cigarettes on one or more of the past 30 days	8.4	25.5
	Smoked two or more cigarettes per day on the days they smoked during the past 30 days	3.8	20.6
	Who were current smokers and have tried to quit smoking during the past 12 months	NR	NR

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Project Findings

- Does Tazewell County have more cancer than Virginia? ***Statistically, no.***
  - Is there underreporting of cancer in Tazewell County? ***Unknown*** based on the information we have gathered.
- Are there environmental factors found in Tazewell that may contribute to Cancer?
  - ***Radon*** is a concern in private and public buildings EXCEPT the schools, which show no high levels.
  - The public waters systems are safe when tested for the most common contaminants (includes schools).
  - Tobacco use, early risk behaviors, lack of nutrient-rich foods and lack of exercise

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Synopsis of Outreach and Engagement Common Themes

- Qualitative data was collected through Facebook-based focus groups and youth Photovoice project
- Cancer is highly emotional issue for individuals, families, and communities
- Common themes included:
- Access to healthcare
  - Great concern for lack of primary care availability and travel distance for treatments
  - No access to screenings/ cost of healthcare is high
- Environmental hazards
  - Something in the water, some genetic cause, chemicals
  - Crumbling buildings, pollution
- Unhealthy lifestyles
  - High tobacco use, lack of physical activity, poor eating habits

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Review of Previous Research

- Carilion/TCH Health Improvement Strategy
  - Did not include Cancer as a major area of concern
- VCU Community Cancer Needs Assessment—2013
  - Concern for lung cancers and Gastrointestinal cancers, poor lifestyle behaviors, lack of primary care & oncology care, poor access to cancer screenings
- Simmons Rand PHA Report (Richlands)
  - Minimal health threats to public—residents have public water, some lead exposure possible on two tracts so children should not play in this area.
- VDH Cancer Cluster Study—Looking specifically at clusters related to sarcoma
  - Does not meet the definition of a cancer cluster
- Youth Risk Behavior Surveillance Systems (YRBSS) Information as it applies to cancer
  - Early alcohol use, early sexual activity, early tobacco use. All of these over time can be related directly to a number of cancers.

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Conclusions and Recommendations

ENVIRONMENTAL

- Radon: Continue testing in private homes and untested buildings
  - Connect people with affordable mitigation opportunities
- Water: Some water fountains and pipes may need replaced in Schools (low levels of lead exposure—no carcinogens found)

BEHAVIORAL/LIFESTYLE

- Lack of Primary Care: Concentrate efforts on bringing more physicians, affordable health care, and cancer screenings to the County.
- Lack of walkable communities and activity opportunities: More sidewalks, trails, playgrounds, and community fitness centers
- Lack of nutritious food in most diets: Encourage home gardening, farmers' markets, educational programs in schools, senior centers, workplace that encourage nutritious eating and good health habits.
- Tobacco use: Continue to educate the youth population and increase efforts to educate all residents about the consequences of tobacco use.