Agenda

- 1:00 - Introduction & Background
- 1:10 - Six Steps to a Literature Search
- 2:00 - Break
- 2:15 - Group Exercise
- 3:00 - Conclude
Background

What is a literature search?

A well thought out, organized search for literature published on a specific topic.
Background

- Why is a literature search important?
  - Uncovers what already exists on a topic
    - Increases your knowledge base
    - Identifies previously conducted work
    - Identifies research methods and results

- Conveys Understanding
  - Demonstrates your familiarity with the topic
  - Shows how your work contributes or differs
What do I really get out of a literature search?
- Helps you define your research
- Provides focus and direction to your research

Literature Search may uncover:
- A solution to your problem ready for use right now
- A solution that just needs a little tweaking
- Someone else is currently working on your issue
Step One

STOP WRITING THE RFP!
Step One

- Identify your topic (problem)
  - What is your issue?
  - What do you need to have answered?
  - Expect to reevaluate your topic/problem

- Set yourself a schedule
  - Give yourself deadlines
  - Stick to them
Step Two

- Conduct a high-level, preliminary literature search on your own
  - Before you go to the library
  - Quick overview
Step Two

□ WHY???
□ Help define/refine your topic
□ Begin identifying key words
□ Narrows your topic to be more manageable
□ Prepares you to go to the ODOT Library (Step 3)
Step Two

- **Key Words**
  - Word or phrases that search engines look for
  - Related to your topic
  - Identified by the author
  - Consider using synonyms, alternative terms, and truncating
    - Can widen your search
    - Results not relevant to your problem
Step Two

- Sources for Preliminary Literature Search
  - TRID
    - http://trid.trb.org/
  - RIP
    - http://rip.trb.org/
  - Practice Ready Papers
    - http://prp.trb.org/
  - Google Scholar
    - http://scholar.google.com/
Step Two

- Review the findings
  - Scan the abstracts
  - Scan articles of interest
  - Look for pertinent information & patterns

- Review your topic/problem
  - Has your issue changed?
  - Refine topic/problem appropriately
Step Three

☐ Go to the ODOT Library

The secret to a successful journey though the literature review

PACK WISELY BEFORE YOU BEGIN
Step Three

Just as in packing for a trip, you want everything that you take with you to be **RELEVANT** and **USEFUL**
Step Three

- Ask yourself a question or two:
  - What problem am I trying to solve?
  - What question am I trying to answer?
Step Three

☐ Is your question a matter of:
   ☐ Theory?
   ☐ Methodology?
   ☐ Policy?

☐ Quantitative (effectiveness/impact of a new procedure: did it work, and why/why not)?

☐ Qualitative (studies and research)?
Step Three

☐ What types of responses will answer your question?
  ☐ Journal research or studies
  ☐ DOT research
  ☐ Product literature
  ☐ Patents
  ☐ AASHTO listserv email response
Step Three

- How far back in time is RELEVANT and USEFUL?
  - Current information (2010-present)
  - Retrospective back 5, 10, 15, or more years
  - Keep in mind: the past helps to define the future
Step Three

- Geographically speaking
  - United States
  - International
  - For example: All countries with SNOW and ICE
  - English-only…
    - Spanish, French, German
Step Three

- Phrases, terms and keywords
  - Winter maintenance AKA Snow and ice
  - Anti-icing vs deicing
  - LIDAR AKA Light Detection and Ranging
  - General to specific
  - What else is it called?
  - I want this, but not that
Step Three

And...

Keep a log of where have you already looked, and

What documents that you already have
Step Three

☐ Using the AASHTO Listserv Samples

The Ohio Department of Transportation Office of Personnel is seeking information from State DOT’s which utilize Facebook as a means to create greater interest and awareness of job/career opportunities. For those State DOTs who do use Facebook, please respond to the following:

☐ Are all transportation job openings displayed on Facebook or only those job openings in which recruitment difficulties are encountered?

☐ What types of positions have you had success with?

☐ Does your Facebook page direct applicants to the State website for job openings?

☐ What are the advantages/disadvantages in using Facebook for recruitment purposes?
Step Three

☐ AASHTO Listserv Samples (continued)

The Illinois DOT is trying to locate and obtain copies, print or electronic of any anti-icing/deicing guidelines used by your state. Please send responses to…..
Step Three

☐ AASHTO Listserv Samples (continued)

As part of our ongoing bridge inspection program in the State of Washington we require inspectors periodically attend refresher training. Our current training curriculum is out of date and no longer considered to be equivalent to NHI Training by FHWA. We are looking into options for making updated training available. We are interested to discover if any other DOT’s have a refresher training course that they are delivering that is approved by FHWA. Please provide a response by close of business February 16th.

http://www.surveymonkey.com/s/G5D376X
Step Three

- Using the sites:
  - TRID
    - http://trid.trb.org/
  - RIP
    - http://rip.trb.org/
  - Practice Ready Papers
    - http://prp.trb.org/
Step Four

- Review the information

You will need to actually read the articles!
Step Four

- Organize the information
  - Scan the abstracts
    - Highlight items of interest
    - Make notes in the margins
  - Categorize the articles into groups
    - Definitely relates
    - Somewhat relates
    - Doesn’t relate
Step Four

- Create a list of questions
  - Focuses your reading
  - Helps analyze and evaluate the article
  - Reminds you what you are looking for

- Ultimate goals:
  - Have manageable amount articles
  - Avoid over investigation
  - Lessen information overload
Step Four
Sample Questions

- Does this answer my issue?
  - Can I use it as is?
  - Does it need tweaking first?
- How does this contribute to my issue?
  - Starting point
  - Background information
  - Goes in a different direction
- Who wrote/conducted this?
  - Are they reputable?
- When was this research done?
  - Still applicable or out-of-date?
- Why was this research done?
  - What was their goal/purpose?
- What are the findings?
  - Does this answer their issue?
  - Are the findings acceptable?
- How does this impact my issue?
  - Enhances understanding
  - Changes approach
  - Indicates things to avoid
  - No change
Step Four

- Start with *Definitely Relates* pile first
  - Scan the articles
  - Read with targets in mind
    - Think of your questions
  - Highlight and take notes *as you read*
    - What’s good / Why do you like this?
    - What’s bad / Why don’t you like this?
    - The more you read…. the more things will begin to seem similar
Step Four

- Keep track of where the information came from (references list)
  - Websites change - Print (or save) articles

- Review your schedule
  - Do you have time to review the “Somewhat Relates” pile in detail?
  - High level assessment only?
Step Five

- Summarize your findings
  - Existing Research Section of the RFP
    - What did you find?
    - How is it relevant?
    - How is it not relevant?

- Convey strengths, weaknesses, and applicability of the findings to your issue
Step Five

□ Sample #1:

□ RFP 2009-07 - GPS-Based Household Interview Survey for the Cincinnati, Ohio Region


2) Comparative Analysis of Global Positioning System-Based and Travel Survey-Based Data, Stacey Bricka and Chandra R. Bhat, UT at Austin, TRR No. 1972, pp. 9-20, 2006

3) Estimating Trip Rate Under-reporting: Preliminary Results from the Ohio Household Travel Survey, Ben Pierce, Jesse Casas, NuStats, and Gregory T. Giaimo, ODOT, Presented at 82nd Annual Meeting of the Transportation Research Board, 2003

4) “Developing and Deploying a New Wearable GPS Device for Transport Applications,” Stopher, P.R., S.P. Greaves, and C. FitzGerald, 2nd International Colloquium on the Behavioural Foundations of Integrated Land Use and Transportation Models, 2005


6) “Elimination of the Travel Diary. An experiment to derive trip purpose from GPS Travel Data,” J. Wolf, R. Guensler, and W. Bachman, Presented at 80th Annual Meeting of the Transportation Research Board, 2001


8) Comparison of trip determination methods in household travel surveys enhanced by a Global Positioning System, Forrest, Timothy and David Pearson, TRR No. 1917, 2005


12) 1999 Mid-Ohio Area Household Travel Survey Final Report, NuStats, MORPC, 2000

13) 2001-2003 Ohio Statewide Household Travel Survey, NuStats, 2004
Step Five

☐ Sample #1 (continued):

☐ RFP 2009-07 - GPS-Based Household Interview Survey for the Cincinnati, Ohio Region

☐ Paper 1 details a study, similar to the one proposed, that was conducted in Sydney, Australia. However, it is desired that this study also include auto occupancy and joint travel.

☐ Reports 2 and 3 report some of the deficiencies of diary-based surveys and how GPS-based add-ons can help correct for them.

☐ Reports 4 and 5 relate to the use of GPS-based units in travel surveys.

☐ Reports/Papers 6-11 are related research that may contain information of use to this project.

☐ Reports 12 and 13 are the final reports from the MORPC and Ohio Statewide Travel Surveys. It is intended that this research be able to replicate the data obtained from these surveys as much as possible.
Step Five

Sample #2:

- RPF 2009-09 - Resilient Modulus Predictive Models for Ohio Granular Base and Subgrade

The following reports/papers discuss models used to predict resilient modulus of soils and granular base:


2) “Predicting Resilient Modulus: A study to Determine the Mechanical Properties of Subgrade Soils”, R. F. Carmichael III and E. Stuart. TRR 1043, Transportation Research Board, Washington, DC 1985. This paper includes a model which predicts MR for granular soil given the unified classification, water content, and bulk stress.

3) “Study of LTPP Laboratory Resilient Modulus Test Data and Response Characteristics”, Amber Yau and Harold L. Von Quintus. FHWA-RD-02-051, Federal Highway Administration, McLean, Virginia, 2002. One conclusion of this study is the resilient modulus can be reasonably predicted from the physical properties included in the LTPP database, but there is bias in the calculated values.

4) “Prediction of Resilient Modulus from Soil Index Properties”, K. P. George. The Mississippi DOT, Jackson, Mississippi, 2004. This report details the development of a model for Mississippi DOT.

5) “Resilient Modulus Prediction Models Based on Analysis of LTPP Data for Subgrade Soils and Experimental Verification”. Ramesh Malla and Shraddha Joshi, Journal of Transportation Engineering, Vol. 133, No. 9, September 1, 2007. This paper contains models that would need to be evaluated under Task 1.
Step Five

Sample #2 (continued):

- RPF 2009-09 - Resilient Modulus Predictive Models for Ohio Granular Base and Subgrade

The following reports contain resilient modulus values for Ohio granular base and/or subgrade materials.

1) “Characterization of Ohio Subgrade Types”, J Ludwig Figueroa, Eric Angyal, & Xiaohua Su. Case Western Reserve University, Cleveland, Ohio, 1994

2) “Extended Monitoring and Analysis of Moisture-Temperature Data”, J Ludwig Figueroa. Case Western Reserve University, Cleveland, Ohio, 2001

3) “Monitoring and Analysis of Data Obtained from Moisture Temperature Recording Stations”, J Ludwig Figueroa. Case Western Reserve University, Cleveland, Ohio, 2001


Step Five

☐ Sample #3:

☐ RFP 2008-01 - Cost Benefit Models to Support PMS Decisions

Several related research projects/reports were found in a search of the RIP and TRIS databases. Many of these presented concepts or case studies. The following studies identify concepts or research methods which can be used to perform this research, or describe procedures used by others. Given the ODOT specific nature of PMIS, none of these studies have produced procedures or software which can be incorporated into PMIS without modification.

RIP:
1) Maintenance and Rehabilitation Integration into the PMS for Long Range Planning, Missouri DOT, 7/15/2000 start date
2) Pavement Performance Evaluation and Rehabilitation Strategies Effectiveness, Arizona DOT, 4/13/98 start date
3) Highway Asset Management Systems for Canadian Agencies, Transportation Association of Canada, 1999 end date.

TRIS:
1) Integrated Pavement Management System with a Markovian Prediction Model; Abaza, Ashur, & Al-Khatib; Journal of Transportation Engineering, Vol 130, No 1, January, 2004
2) Guidelines for a Roadway Management System (RMS) for Local Governments; Misra, Roohanirad, & Somboonyanon; Midwest Transportation Consortium, October, 2003.
3) Issues in Integrating Pavement Management and Preventive Maintenance; Zimmerman & Peshkin; TRR No. 1889, 2004
4) Integer Programming of Maintenance and Rehabilitation Treatments for Pavement Networks; Li, Haas, & Huot; TRR No. 1629, 1998
Step Five

☐ Sample #4:

☐ RFP 2011-10: Determining the Limitations of Warm Mix Asphalt by Water Injection in Mix Design, Quality Control and Placement

OCLC First Search, QuickSearch, TRB RiP Search, and TL Cat databases were searched for relevant research. Since WMA is a relatively new field a lot of the research was looking into what had come out of Europe originally. The majority of this research did not address the foaming method of WMA. The method used in Ohio for foaming was first developed for WMA by Astec around 2006-2007. Because of this there is recognition nationally that some of the questions in the problem statement need researched. Although existing studies have also determined what questions remain (as did our student study on WMA) none of the existing research answers the questions for foaming adequately.
Step Five

Sample #5:

RFP 2013-06: Designing a Research Implementation Process and Criteria for Performance Measures

The concept of implementation tracking and performance measures is not new. Over the years, these subjects, relative to transportation research, have been researched and analyzed at both the national and state levels on numerous occasions. Realizing there is a vast amount of information available, which is applicable to this research project, ODOT is not interested in reinventing the wheel, but is seeking a methodology that is applicable to Ohio’s situation. Results of a preliminary literature search conducted by ODOT identified a plethora of reports. Below is a sampling of some of the reports that ODOT found to be of interest.

Step Five

Sample #6:

- RFP 2009-04 - Rapid Orthophoto Development System

Both RIP and TRIS were checked. RIP did not reveal any potential related items. The TRIS search noted 35 potential items of interest. Only one of the TRIS search items “USGS Automatic Orthophoto System” seemed similar, so we reviewed the details and discovered that the research did not apply. The research was conducted in 1971 and did not utilize digital imaging.
Step Six

- Re-evaluate your issue
  - Has it changed?
  - Did you identify new steps/tasks for the “proposed research” section of the RFP?
- Go write your RFP
Step Six

- Check out the RFP Workshop Video

  - [http://www.dot.state.oh.us/Divisions/Planning/SPR/Research/Training/Pages/RFP_Workshop.aspx](http://www.dot.state.oh.us/Divisions/Planning/SPR/Research/Training/Pages/RFP_Workshop.aspx)
Questions

Break

Back in 15 minutes
Group Exercise

- You pick the topic.....
- Now, let’s do a literature search.....