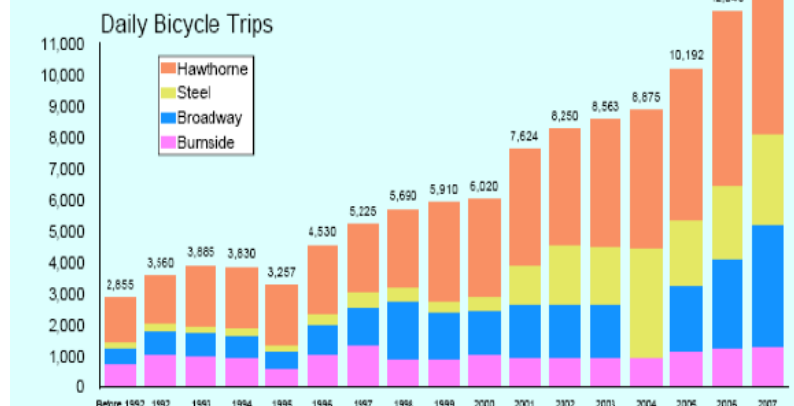


Proposal for Additional Bike Box Locations in Portland, Oregon

By Scott Fletcher

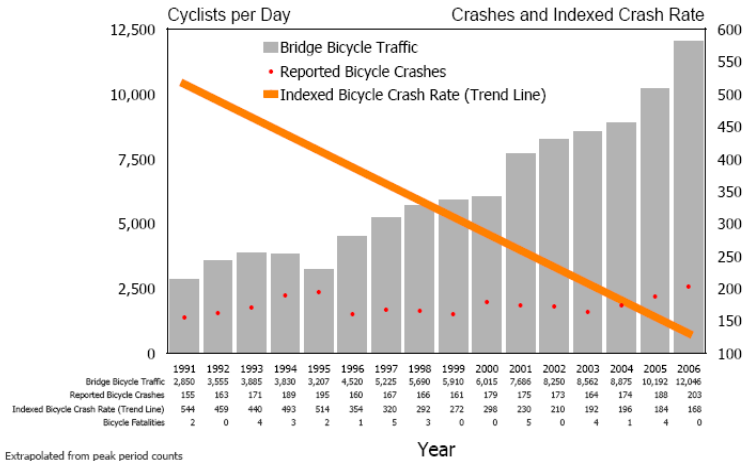


Average Daily Bicycle Traffic 4 Main Willamette River Bicycle Bridges



<http://www.commissionersam.com/files/Improving%20Bicycle%20Safety%20in%20Portland%20102607.pdf>

Combined Bicycle Traffic over Four Main Portland Bicycle Bridges Juxtaposed with Bicycle Crashes

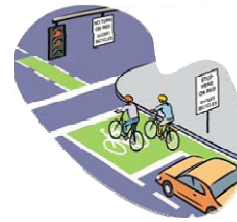


Extrapolated from peak period counts

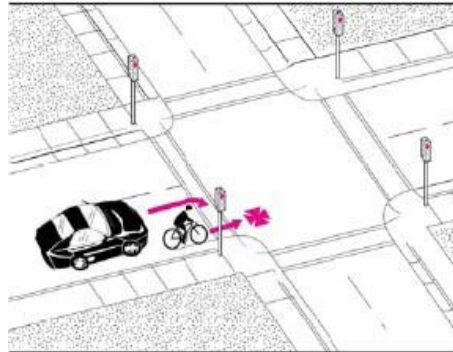
"Crash Rate" represents an indexing of annual reported crashes to daily bicycle trips across the four main bicycle bridges.

<http://www.commissionersam.com/files/Improving%20Bicycle%20Safety%20in%20Portland%20102607.pdf>

Bike Boxes



The Right Hook



Bike Box Locations

Difficult Intersections Targeted for Immediate Treatment

1. N Interstate and Greeley
2. NE Broadway and Williams
3. NW Lovejoy and 9th
4. NW Broadway and Hoyt
5. NW Everett and 16th
6. SE Hawthorne and 7th
7. SE Hawthorne and 11th
8. SW 14th and Burnside
9. SW Broadway and Taylor
10. SW Broadway and Jefferson
11. SW Broadway and Clay
12. SW Madison and 3rd
13. SW 6th and Broadway
14. SW Tervilliger and Taylor's Ferry

These intersections represent a subset of difficult intersections identified by a combination of:

Attendees at Portland's Bike Summit, held in June, 2006

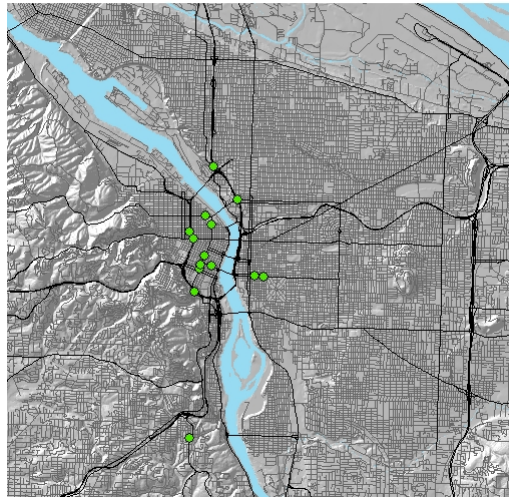
The City's Bicycle Advisory Committee

Attendees at the Platinum Bicycle Master Plan Open Houses, held in June, 2007

Portland Office of Transportation Staff

<http://www.commissionersam.com/files/Improving%20Bicycle%20Safety%20in%20Portland%20102607.pdf>

Map of Bike Box Locations



The Data:

Obtained from The Intelligent Transportation Systems Laboratory @ PSU

Screenshot of the ORTSDA - Oregon Traffic Safety Data Archive website, viewed in Internet Explorer. The page displays the project team, table of contents, quick links, and work plan.

Project team

Name	Role	Organization	Phone
Monsere, Chris	Co-PI	PSU	503-725-9746
Alaksel, Heba	GRA	PSU	503-415-0283
Lim, Myeonsoo	GRA	PSU	503-777-7777

Table of Contents

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- [Tasks](#)

Quick Links

- [http://www.iutl.pdx.edu/safety/history/](#) (need password)
- [ODOT Crash Analysis and Reporting Code Manual \(2007\)](#) [http://regov.oregon.gov/ODOT/IDOTDATA/accrpx/2007CodeManual/Version2.0.pdf](#)
- [ODOT CAR Publications](#) [http://gov.oregon.gov/ODOT/IDOTDATA/accrpx/2007CodeManual/Version2.0.pdf](#)
- [http://web.cerpa.pdx.edu/~schubert/review.php](#) [DRAFT]

Work Plan

- [08176_Monsere_TrafficDataArchive_Proposal_ChangesAccepted.doc](#): OTRC Proposal
- [Proposal_Monsere_FrancisDeviant_2006_ORTSDA.pdf](#)
- [Website](#) [http://web.cerpa.pdx.edu/~ortda/](#)

Mission Statement

- [Mission Statement](#): The mission of the Oregon Traffic Safety Data Archive is to build the knowledge base of traffic safety data in Oregon. The

The Database

CRASH_DT	CITY_SECT_NM	ST_FULL_NM	ISECTG_ST_FULL_NM	TOT_PEDCYCL_CNT	TOT_PEDCYCL_FATAL_CNT	TOT_PEDCYCL_INJ_CNT
1995-01-12	Portland N	N DEVON AVE	N BROADWAY ST	1	0	1
1995-01-13	Portland NE	NE 70TH AVE	NE HASSALO ST	1	0	1
1995-01-17	Portland SE	SE ADP ST	SE 8TH AVE	1	0	1
1995-01-23	Portland SW	SW MILL ST	SW 45TH AVE	1	0	1
1995-01-23	Portland N	DIAGRAM ZONE 4		1	0	1
1995-01-26	Portland NW	NW SKYLINE BLVD	NW THOMPSON RD	1	0	1
1995-01-26	Portland NE	NE WASCOT ST	NE 22ND AVE	1	0	1
1995-01-27	Portland SE	SE MORRISON ST	SE 7TH AVE	1	0	1
1995-01-30	Portland NE	NE JARRETT ST	NE SALVATION BLVD	1	0	1
1995-01-30	Portland SE	SE 43RD AVE	SE HAWTHORNE BLVD	1	0	1
1995-02-01	Portland SE	SE WOODWARD ST	SE 74TH AVE	1	0	1
1995-02-03	Portland SE	SE HOLGATE BLVD	SE 115TH AVE	1	0	1
1995-02-03	Portland SW	SW BARBUR RD	SW TAYLORS FERRY RD	1	0	1
1995-02-03	Portland SE	SE MADISON ST	SE 23RD AVE	1	0	1
1995-02-09	Portland SE	SE BELMONT ST	SE 66TH AVE	1	0	1
1995-02-09	Portland NE	NE BROADWAY ST	NE 42ND AVE	1	0	1
1995-02-10	Portland N	N BROADWAY AVE	N LOREDA ST	1	0	1
1995-02-17	Portland SE	SE MORRISON ST	SE 20TH AVE	1	0	1
1995-02-29	Portland SW	SW BROADWAY AVE		1	0	1

The Crash Query

```
SELECT `CRASH_DT`, `CITY_SECT_NM`, `ST_FULL_NM`,  
       `ISECTG_ST_FULL_NM`, `TOT_PEDCYCL_CNT`,  
       `TOT_PEDCYCL_FATAL_CNT`, `TOT_PEDCYCL_INJ_CNT`
```

```
FROM `CRASH`
```

```
WHERE `CITY_SECT_NM` LIKE 'Portland%' AND  
      `TOT_PEDCYCL_CNT` > 0
```

Excel

CRASH_DT	CITY_SECT_NM	ST_FULL_NM	INTERST_ST_FULL_NM	TOT_PEDCYCL_ENT	TOT_PEDCYCL_FATAL_ENT	TOT_PEDCYCL_INV_ENT
1999-01-12	Portland N	N BENTON AVE	N BROADWAY ST	0	0	0
1999-01-13	Portland NE	NE 76TH AVE	NE HADDAM ST	0	0	0
1999-01-17	Portland SE	SE 60TH ST	SE 8TH AVE	0	0	0
1999-01-23	Portland SW	SW 9TH ST	SW 8TH AVE	0	0	0
1999-01-23	Portland N	DIAGRAM 3025	ZONE 4	0	0	0
1999-01-26	Portland NW	NW SPILANE BLVD	NW THOMPSON RD	0	0	0
1999-01-26	Portland NE	NE WACCO ST	NE 22ND AVE	0	0	0
1999-01-27	Portland SE	SE MADISON ST	SE 7TH AVE	0	0	0
1999-01-30	Portland NE	NE MADISON ST	NE 44TH AVE	0	0	0
1999-01-30	Portland SE	SE MADISON ST	SE 44TH AVE	0	0	0
1999-02-01	Portland SE	SE WOODWARD ST	SE 74TH AVE	0	0	0
1999-02-05	Portland SE	SE HOLLYATE BLVD	SE 11TH AVE	0	0	0
1999-02-09	Portland SW	SW BARBOUT BLVD	SW TOLSON PERRY RD	0	0	0
1999-02-09	Portland SE	SE MADISON ST	SE 23RD AVE	0	0	0
1999-02-09	Portland SE	SE BELMONT ST	SE 60TH AVE	0	0	0
1999-02-09	Portland NE	NE BROADWAY ST	NE 22ND AVE	0	0	0
1999-02-15	Portland N	N BUCHANAN AVE	N LOMBARD ST	0	0	0
1999-02-17	Portland SE	SE MADISON ST	SE 20TH AVE	0	0	0
1999-02-20	Portland SW	SW BROADWAY AVE	SW 10TH AVE	0	0	0
1999-02-27	Portland N	N BENTON ST	N KENDALL AVE	0	0	0
1999-02-28	Portland NE	NE BROADWAY ST	NE 18TH AVE	0	0	0
1999-02-28	Portland NE	NE SENATE ST	NE 18TH AVE	0	0	0
1999-03-04	Portland SE	SE DIVISION ST	SE 22ND AVE	0	0	0
1999-03-04	Portland SE	SE REEDY ST	SE 46TH AVE	0	0	0
1999-03-07	Portland SE	SE BUSH ST	SE 8TH AVE	0	0	0
1999-03-16	Portland SW	SW BEAR-HILLSDALE HWY	SW SHATTUCK RD	0	0	0
1999-03-23	Portland E, Burnside	E BURNINGIDE ST	28TH AVE	0	0	0
1999-03-24	Portland NW	NW 11TH ST	NW 4TH AVE	0	0	0

Creating an Intersection Field

Formula Bar: `=CONCATENATE(D1," "&E1)`

Dialog Box: CONCATENATE Arguments

Text1: `ST_FULL_NM`

Text2: `" "`

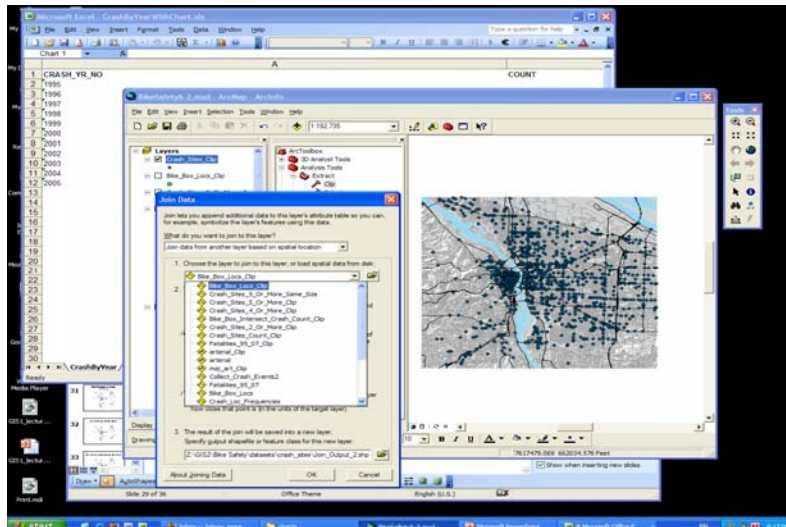
Text3: `INTERST_ST_FULL_NM`

Formula result: `= ST_FULL_NM & INTERST_ST_FULL_NM`

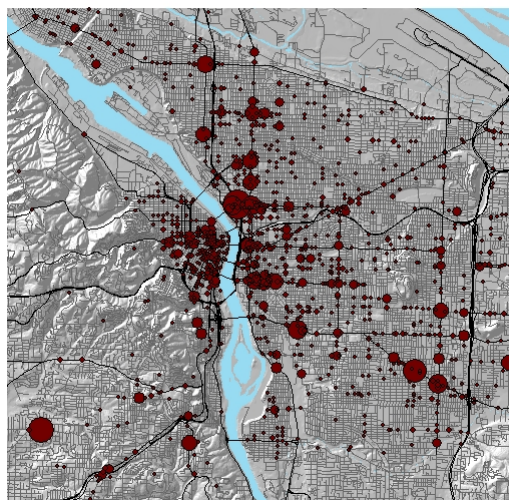
Intersection Information

Geocoding

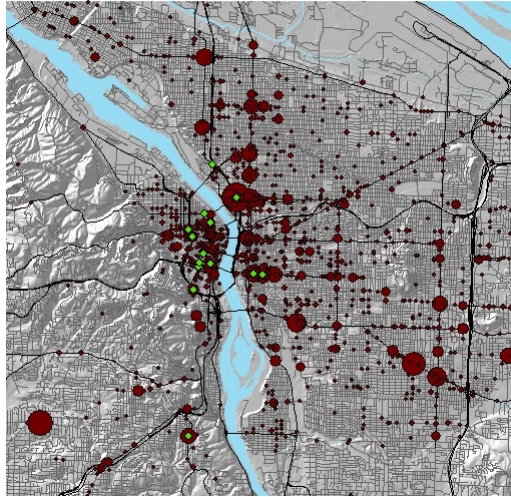
Counting Duplicate Crash Data



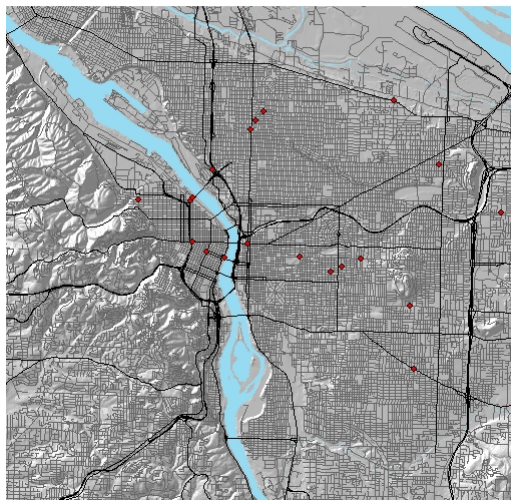
Locations of Accidents (1995-2005)



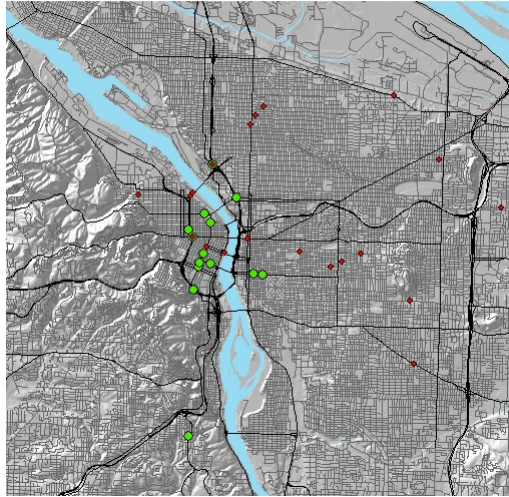
Accidents with Bike Boxes



Locations of Fatalities (1995-2007)



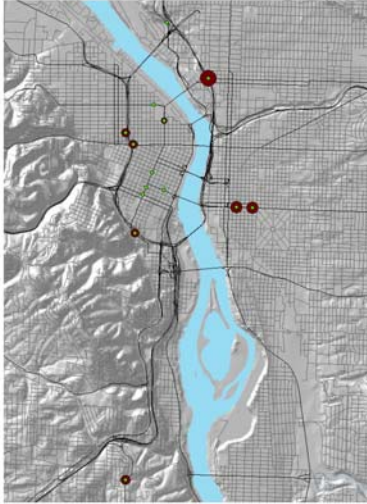
Fatalities with Bike Boxes



Bike Box Location Stats

N Broadway and N Williams	9 crashes	0 fatalities
SE 11th & SE Hawthorne	6 crashes	0 fatalities
SE 7th & SE Hawthorne	6 crashes	0 fatalities
SW Terwilliger & SW Taylors Ferry	5 crashes	0 fatalities
NW Everett & NW 16th	4 crashes	0 fatalities
SW Broadway & SW 6th	4 crashes	0 fatalities
W Burnside & NW 14th	3 crashes	1 fatality
NW Broadway & NW Hoyt	3 crashes	0 fatalities
N Interstate & N Greeley	2 crashes	1 fatality
SW Broadway & SW Clay	1 crash	0 fatalities
SW Broadway & SW Taylor	1 crash	0 fatalities
SW Madison & SW 3rd	1 crash	0 fatalities
NW Lovejoy & NW 9th	0 crashes	0 fatalities
SW Broadway & SW Jefferson	0 crashes	0 fatalities

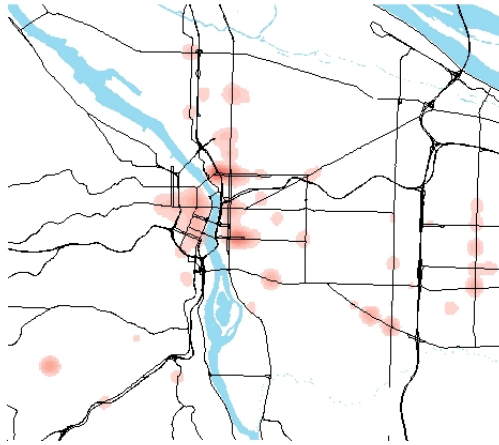
Bike Boxes with Crash Data



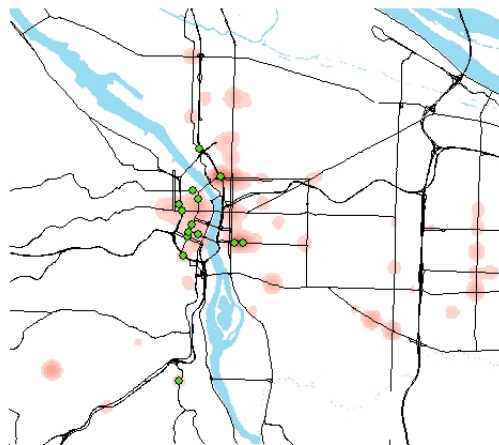
Intersections with the Most Incidents (5 or more reported from 1995 to 2005)

<i>N Broadway & N Williams Ave</i>	<i>9</i>
SW Garden Home Rd & SW Multnomah Blvd	9
SE Foster Rd & SE 72nd Ave	8
NE Broadway & NE Grand Ave	7
N Broadway & N Wheeler Ave	7
SE Powell Blvd & SE 26th Ave	7
SE Powell Blvd & SE 122nd Ave	7
SE Foster Rd & SE 82nd Ave	7
N Lombard St & N Interstate Ave	6
<i>SE Hawthorne Blvd & SE 7th Ave</i>	<i>6</i>
<i>SE Hawthorne Blvd & SE 11th Ave</i>	<i>6</i>
SE Market St & SE 122nd Ave	6
NE MLK JR Blvd & NE Killingsworth St	5
N Going St & N Interstate Ave	5
NE Fremont St & NE MLK JR Blvd	5
NE Knott St & NE MLK JR Blvd	5
NE 122nd Ave & NE Gilson St	5
E Burnside St & SE MLK JR Blvd	5
SE Stark St & SE 122nd Ave	5
SE Hawthorne Blvd & SE 16th Ave	5
SE 82nd Ave & SE Division St	5
SE Division St & SE 130th Ave	5
SE Holgate Blvd & SE 111th Ave	5
<i>SW Taylors Ferry Rd & SW Terwilliger Blvd</i>	<i>5</i>

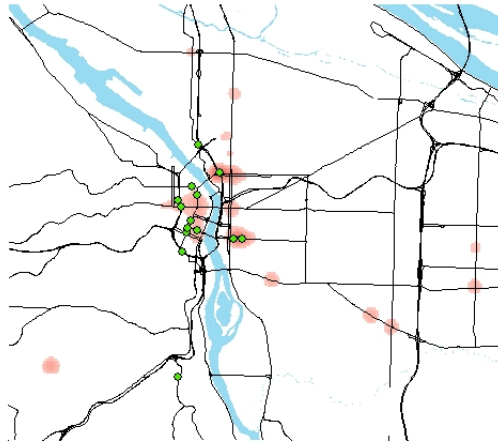
Areas with the Most Incidents (Kernel Density)



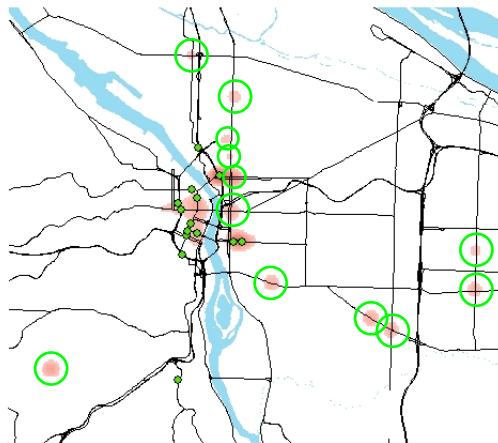
Kernel Density with Bike Boxes



Reduced Kernel Density with Bike Boxes



Proposed Bike Box Locations



Proposed Bike Box Locations:

North Portland	Interstate & Lombard
NorthEast	Killingsworth & MLK
	Fremont & MLK
	Knott & MLK
	Broadway & Grand
SouthEast	E Burnside & Grand
	Powell & 26th
	Foster & 72nd
	Foster & 82nd
	122nd & Market
	122nd & Powell
SouthWest	Garden Home & Multnomah/69th

Further Analysis

- Visiting Current Bike Box Locations
- Visiting Sites of Proposed Bike Box Locations
- Try to measure the danger of an intersection independent of the bicycle traffic (slope leading to intersection, bus stops, number of lanes, one-way vs two-way traffic, turns permitted on red light, etc)
- Follow-up Crash Data Evaluation 2 years from now

References

<http://www.commissionersam.com/files/Improving%20Bicycle%20Safety%20in%20Portland%20102607.pdf>

http://www.bts.gov/programs/national_household_travel_survey/daily_travel.html

<http://www.enhancements.org/download/trb/trb2004/TRB2004-001550.pdf>

http://www.des.ucdavis.edu/faculty/handy/ESP178/Dill_bike_facilities.pdf

<http://blog.oregonlive.com/oregonianextra/2007/10/bikes.html>

<http://www.bikeplan.com/map.htm>

<http://wiki.cecs.pdx.edu/bin/view/ItsWeb/OrtsdaProject>

RLIS

Questions?

