

eda_la2

darshan gowda v and chandan v

2023-05-29

```
library(leaflet)
library(readr)
library(lattice)
library(vioplot)

## Loading required package: sm
## Package 'sm', version 2.2-5.7: type help(sm) for summary information
## Loading required package: zoo
##
## Attaching package: 'zoo'
## The following objects are masked from 'package:base':
##
##      as.Date, as.Date.numeric

library(ggplot2)
library(plotrix)
library(gcookbook)
library(dplyr)

##
## Attaching package: 'dplyr'
## The following objects are masked from 'package:stats':
##
##      filter, lag
## The following objects are masked from 'package:base':
##
##      intersect, setdiff, setequal, union

dataset <- read.csv(file.choose())

dataset

##           datetime Vancouver Portland San.Francisco Seattle Los.Angeles
## 1 01-10-2012 12:00         NA         NA           NA         NA         NA
## 2 01-10-2012 13:00          76          81           88          81          88
## 3 01-10-2012 14:00          76          80           87          80          88
## 4 01-10-2012 15:00          76          80           86          80          88
## 5 01-10-2012 16:00          77          80           85          79          88
```

## 6	01-10-2012 17:00	78	79	84	79	88
## 7	01-10-2012 18:00	78	79	83	78	88
## 8	01-10-2012 19:00	79	78	82	77	88
## 9	01-10-2012 20:00	79	78	81	77	88
## 10	01-10-2012 21:00	80	77	80	76	88
## 11	01-10-2012 22:00	81	77	79	76	88
## 12	01-10-2012 23:00	81	77	78	75	88
## 13	02-10-2012 00:00	82	76	77	75	88
## 14	02-10-2012 01:00	83	76	76	74	88
## 15	02-10-2012 02:00	83	75	75	73	88
## 16	02-10-2012 03:00	84	75	74	73	88
## 17	02-10-2012 04:00	84	75	73	72	88
## 18	02-10-2012 05:00	85	74	72	72	88
## 19	02-10-2012 06:00	86	74	71	71	88
## 20	02-10-2012 07:00	86	73	70	71	88
## 21	02-10-2012 08:00	87	73	69	70	88
## 22	02-10-2012 09:00	87	73	68	69	88
## 23	02-10-2012 10:00	88	72	67	69	88
## 24	02-10-2012 11:00	89	72	66	68	88
## 25	02-10-2012 12:00	89	71	65	68	88
## 26	02-10-2012 13:00	90	71	64	67	88
## 27	02-10-2012 14:00	91	71	63	67	88
## 28	02-10-2012 15:00	89	76	51	87	88
## 29	02-10-2012 16:00	76	62	56	76	23
## 30	02-10-2012 17:00	76	75	94	58	19
## 31	02-10-2012 18:00	67	52	70	63	24
## 32	02-10-2012 19:00	58	60	83	48	15
## 33	02-10-2012 20:00	53	56	75	43	12
## 34	02-10-2012 21:00	47	34	75	43	14
## 35	02-10-2012 22:00	45	32	18	38	22
## 36	02-10-2012 23:00	52	32	11	49	21
## 37	03-10-2012 00:00	49	34	15	38	27
## 38	03-10-2012 01:00	57	39	18	40	42
## 39	03-10-2012 02:00	72	50	25	56	54
## 40	03-10-2012 03:00	76	53	31	64	57
## 41	03-10-2012 04:00	83	60	27	93	60
## 42	03-10-2012 05:00	87	64	31	77	53
## 43	03-10-2012 06:00	76	72	28	76	60
## 44	03-10-2012 07:00	81	82	89	71	60
## 45	03-10-2012 08:00	80	86	89	67	24
## 46	03-10-2012 09:00	81	77	68	71	53
## 47	03-10-2012 10:00	83	71	48	76	56
## 48	03-10-2012 11:00	85	76	83	87	26
## 49	03-10-2012 12:00	87	78	62	84	45
## 50	03-10-2012 13:00	87	81	42	81	64
## 51	03-10-2012 14:00	85	81	48	67	64
## 52	03-10-2012 15:00	80	79	53	58	56
## 53	03-10-2012 16:00	75	77	58	50	49
## 54	03-10-2012 17:00	70	76	64	42	42
## 55	03-10-2012 18:00	62	71	60	39	24

## 56	03-10-2012 19:00	63	63	56	34	21
## 57	03-10-2012 20:00	47	63	50	32	38
## 58	03-10-2012 21:00	48	55	41	33	33
## 59	03-10-2012 22:00	51	52	28	33	34
## 60	03-10-2012 23:00	54	49	16	33	35
## 61	04-10-2012 00:00	NA	43	17	41	35
## 62	04-10-2012 01:00	62	52	21	38	39
## 63	04-10-2012 02:00	71	55	24	47	47
## 64	04-10-2012 03:00	71	62	25	50	60
## 65	04-10-2012 04:00	70	58	31	58	69
## 66	04-10-2012 05:00	57	62	94	58	69
## 67	04-10-2012 06:00	61	66	88	58	73
## 68	04-10-2012 07:00	70	77	100	40	57
## 69	04-10-2012 08:00	72	71	55	40	77
## 70	04-10-2012 09:00	71	83	94	71	66
## 71	04-10-2012 10:00	NA	71	67	34	82
## 72	04-10-2012 11:00	45	71	67	60	82
## 73	04-10-2012 12:00	43	66	72	56	82
## 74	04-10-2012 13:00	41	77	72	63	82
## 75	04-10-2012 14:00	40	74	72	59	82
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## 77	04-10-2012 16:00	61	23	68	57	88
## 78	04-10-2012 17:00	19	25	68	35	73
## 79	04-10-2012 18:00	19	25	64	47	61
## 80	04-10-2012 19:00	19	24	64	47	54
## 81	04-10-2012 20:00	19	22	57	39	54
## 82	04-10-2012 21:00	44	22	64	39	57
## 83	04-10-2012 22:00	NA	19	47	31	57
## 84	04-10-2012 23:00	25	19	41	NA	60
## 85	05-10-2012 00:00	29	19	47	33	50
## 86	05-10-2012 01:00	26	22	53	36	60
## 87	05-10-2012 02:00	46	25	68	44	77
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## 89	05-10-2012 04:00	46	NA	72	47	88
## 90	05-10-2012 05:00	46	29	72	50	82
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## 92	05-10-2012 07:00	46	41	80	39	81
## 93	05-10-2012 08:00	52	52	88	32	81
## 94	05-10-2012 09:00	52	59	88	44	81
## 95	05-10-2012 10:00	52	66	88	57	82
## 96	05-10-2012 11:00	73	70	72	70	88
## 97	05-10-2012 12:00	72	61	77	70	77
## 98	05-10-2012 13:00	49	57	77	66	77
## 99	05-10-2012 14:00	78	61	72	42	72
## 100	05-10-2012 15:00	52	57	72	76	72
## 101	05-10-2012 16:00	61	53	72	66	64
## 102	05-10-2012 17:00	NA	54	60	46	64
## 103	05-10-2012 18:00	19	41	74	47	63
## 104	05-10-2012 19:00	NA	35	50	36	55
## 105	05-10-2012 20:00	19	16	74	41	49

## 106 05-10-2012 21:00	22	15	47	45	41
## 107 05-10-2012 22:00	19	14	79	42	52
## 108 05-10-2012 23:00	19	26	50	NA	60
## 109 06-10-2012 00:00	19	26	63	NA	60
## 110 06-10-2012 01:00	19	18	67	27	64
## 111 06-10-2012 02:00	36	29	100	28	76
## 112 06-10-2012 03:00	44	25	72	50	82
## 113 06-10-2012 04:00	50	31	77	50	82
## 114 06-10-2012 05:00	44	25	72	NA	82
## 115 06-10-2012 06:00	48	25	77	NA	82
## 116 06-10-2012 07:00	54	47	94	53	90
## 117 06-10-2012 08:00	50	52	91	55	89
## 118 06-10-2012 09:00	46	57	88	57	88
## 119 06-10-2012 10:00	46	70	77	61	88
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## 121 06-10-2012 12:00	63	80	100	46	94
## 122 06-10-2012 13:00	69	55	78	76	77
## 123 06-10-2012 14:00	72	86	74	81	94
## 124 06-10-2012 15:00	74	75	77	NA	82
## 125 06-10-2012 16:00	100	66	77	62	72
## 126 06-10-2012 17:00	35	54	68	43	72
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## 141 07-10-2012 08:00	NA	37	94	66	100
## 142 07-10-2012 09:00	NA	NA	82	81	82
## 143 07-10-2012 10:00	62	46	87	81	82
## 144 07-10-2012 11:00	50	61	87	81	93
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## 147 07-10-2012 14:00	100	81	82	70	88
## 148 07-10-2012 15:00	74	75	82	70	77
## 149 07-10-2012 16:00	66	70	72	54	82
## 150 07-10-2012 17:00	50	50	68	38	68
## 151 07-10-2012 18:00	NA	24	63	44	64
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## 153 07-10-2012 20:00	NA	12	43	34	50
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## 156	07-10-2012 23:00	45	11	40	22	57
## 157	08-10-2012 00:00	45	11	43	18	56
## 158	08-10-2012 01:00	48	13	55	22	68
## 159	08-10-2012 02:00	55	16	63	29	68
## 160	08-10-2012 03:00	NA	20	67	33	73
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## 162	08-10-2012 05:00	54	23	72	41	73
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## 164	08-10-2012 07:00	54	33	82	54	77
## 165	08-10-2012 08:00	65	43	82	66	77
## 166	08-10-2012 09:00	54	57	82	66	82
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## 168	08-10-2012 11:00	54	61	82	81	88
## 169	08-10-2012 12:00	80	70	87	81	88
## 170	08-10-2012 13:00	83	70	87	87	88
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## 172	08-10-2012 15:00	88	75	87	50	88
## 173	08-10-2012 16:00	66	57	82	81	77
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## 175	08-10-2012 18:00	51	36	67	51	64
## 176	08-10-2012 19:00	NA	29	82	42	61
## 177	08-10-2012 20:00	NA	NA	47	42	60
## 178	08-10-2012 21:00	NA	18	77	39	54

San.Diego Las.Vegas Phoenix Albuquerque Denver San.Antonio Dallas
Houston

## 1	NA	NA	NA	NA	NA	NA	NA
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## 2	82	22	23	50	62	93	87
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## 3	81	21	23	49	62	92	86
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90							
## 5	81	21	23	49	62	92	86
89							
## 6	80	21	24	49	63	92	86
88							
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86							
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83							
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82							
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75							
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64							
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72							
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44							
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77							
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77							
## 45	52	24	42	NA	66	93	68
88							
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82							
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77							
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72							
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83							
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88							
## 138	77	27	19	14	NA	77	67

88							
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89							
## 140	80	28	21	20	NA	84	67
91							
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93							
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93							
## 143	82	30	35	85	NA	93	66
100							
## 144	82	30	33	53	NA	88	71
100							
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100							
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93							
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88							
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83							
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69							
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61							
## 151	64	12	20	16	74	69	66
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61							
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58							
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48							
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54							
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57							
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## 169	77	22	37	64	86	81	57
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## 170	77	25	43	69	92	81	66
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## 171	77	23	37	95	79	81	65
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## 173	73	14	29	NA	48	71	53
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## 176	53	10	NA	38	NA	66	NA
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##	Kansas.City	Minneapolis	Saint.Louis	Chicago	Nashville	Indianapolis	
Atlanta							
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## 3	70	66	71	70	99		76
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## 36	46	32	55	48	93	87
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## 10	71	84	87	80	93	69	67

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## 12	70	84	87	79	93	65	66
## 13	70	83	87	79	93	63	65
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## 15	68	82	87	78	93	60	64
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## 17	67	82	87	77	93	56	63
## 18	67	81	87	77	93	54	63
## 19	66	81	87	76	93	53	62
## 20	66	80	87	76	93	51	62
## 21	65	80	87	76	93	49	61
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## 23	64	79	87	75	93	46	60
## 24	63	79	87	75	93	44	60
## 25	63	78	87	74	93	42	59
## 26	62	78	87	74	93	40	59
## 27	62	78	87	74	93	39	59
## 28	55	70	82	78	87	77	48
## 29	48	74	93	83	62	34	52
## 30	45	66	100	83	51	33	43
## 31	37	55	87	88	48	72	35
## 32	42	70	100	88	48	32	37
## 33	39	74	100	88	48	33	37
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## 35	42	88	93	78	51	34	46
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## 46	76	88	94	88	82	82	77
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## 113	82	94	88	78	67	42	93
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## 115	88	88	93	78	67	45	88
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## 132	87	74	56	70	53	48	56
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## 136	87	78	77	74	68	71	77
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## 146	87	83	88	74	87	68	77
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## 165	70	94	77	88	65	92	57
## 166	70	94	82	83	NA	93	61
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## 174	42	66	93	74	61	41	58
## 175	39	52	87	78	65	61	71
## 176	43	70	87	77	65	NA	71
## 177	57	70	82	76	70	41	71
## 178	57	74	87	73	75	NA	71

##	New.York	Montreal	Boston	Beersheba	Tel.Aviv.District	Eilat	Haifa
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## 3	57	91	68	51	62	22	51
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## 43	55	NA	88	76	83	45	60
60							
## 44	52	100	88	66	78	46	60
60							
## 45	63	NA	88	58	74	46	60
60							
## 46	52	100	83	49	74	38	60
60							
## 47	59	100	94	45	74	34	60
60							
## 48	100	93	88	43	74	32	60
60							
## 49	81	96	83	56	74	29	70
79							
## 50	63	100	83	60	74	29	79
79							
## 51	60	NA	83	56	73	44	79
79							
## 52	64	NA	84	63	73	59	79
79							
## 53	68	NA	86	71	73	74	79
79							
## 54	72	NA	88	79	74	28	79
79							
## 55	82	NA	83	82	77	34	79
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## 56	88	NA	83	85	77	38	79
79							
## 57	93	NA	88	87	76	41	79
79							
## 58	93	NA	83	88	76	49	79
79							
## 59	96	38	85	88	72	58	79
79							
## 60	100	77	88	88	69	62	79
79							
## 61	93	NA	83	90	73	69	79
79							
## 62	100	NA	88	91	69	88	79
79							
## 63	100	93	88	94	77	74	79
79							
## 64	100	93	88	95	73	54	79
79							
## 65	100	93	83	94	79	58	79
79							

## 66	100	100	83	69	65	54	79
79							
## 67	100	100	88	58	61	52	62
62							
## 68	100	100	88	51	57	51	62
62							
## 69	100	100	94	40	61	48	62
62							
## 70	93	93	94	40	58	46	62
62							
## 71	100	100	94	34	54	43	62
62							
## 72	100	NA	94	39	49	41	62
62							
## 73	100	93	88	45	49	34	69
69							
## 74	NA	100	93	55	53	34	69
69							
## 75	NA	NA	88	61	55	34	69
69							
## 76	100	NA	69	61	61	34	69
69							
## 77	88	NA	74	67	68	36	69
69							
## 78	83	NA	78	83	65	38	69
69							
## 79	83	NA	74	75	73	38	75
75							
## 80	88	NA	78	73	76	40	75
75							
## 81	88	NA	83	75	78	38	75
75							
## 82	88	NA	78	81	64	54	75
75							
## 83	88	NA	83	75	64	61	75
75							
## 84	88	72	83	73	69	65	75
75							
## 85	88	NA	83	77	69	61	75
75							
## 86	94	72	83	77	69	69	75
75							
## 87	100	72	83	81	69	93	75
75							
## 88	100	82	83	82	73	69	75
75							
## 89	100	93	88	76	73	64	75
75							
## 90	100	NA	88	64	69	57	75
75							

## 91	100	87	88	58	69	53	63
63							
## 92	96	90	88	48	55	49	63
63							
## 93	93	93	88	39	42	45	63
63							
## 94	96	93	88	37	44	39	63
63							
## 95	100	93	88	36	46	33	63
63							
## 96	94	NA	94	38	48	26	63
63							
## 97	94	NA	88	41	61	24	72
72							
## 98	94	NA	78	48	61	23	72
72							
## 99	94	NA	74	52	65	23	72
72							
## 100	88	NA	69	68	65	23	72
72							
## 101	88	NA	48	67	65	24	72
72							
## 102	88	NA	48	80	69	31	72
72							
## 103	94	NA	48	78	69	33	72
72							
## 104	94	NA	51	82	69	35	72
72							
## 105	83	NA	45	91	69	39	72
72							
## 106	78	93	51	80	69	57	72
72							
## 107	94	NA	57	87	65	82	72
72							
## 108	83	100	61	89	69	73	72
72							
## 109	88	93	69	83	73	64	72
72							
## 110	88	NA	73	83	73	100	72
72							
## 111	93	NA	73	86	73	93	72
72							
## 112	88	93	78	94	73	64	72
72							
## 113	83	100	78	83	78	64	72
72							
## 114	88	NA	83	73	78	61	72
72							
## 115	88	NA	88	63	69	56	55
55							

## 116	100	100	83	43	65	51	55
55							
## 117	94	96	83	31	61	37	55
55							
## 118	88	93	83	26	58	24	55
55							
## 119	88	NA	83	29	65	21	55
55							
## 120	77	NA	83	29	61	21	55
55							
## 121	72	NA	83	41	58	21	66
66							
## 122	NA	93	73	44	58	20	66
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## 123	64	NA	61	51	58	20	66
66							
## 124	56	93	53	59	61	21	66
66							
## 125	56	NA	47	73	61	22	66
66							
## 126	50	NA	50	76	65	33	66
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## 127	41	NA	44	67	71	42	67
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67							
## 129	39	NA	47	82	64	68	67
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## 130	42	NA	50	83	75	50	67
67							
## 131	53	NA	64	88	64	77	67
67							
## 132	53	77	73	89	73	77	67
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## 134	68	NA	88	76	73	57	67
67							
## 135	68	77	82	83	73	60	67
67							
## 136	64	NA	93	84	73	60	67
67							
## 137	64	NA	93	96	73	54	67
67							
## 138	64	NA	88	73	69	50	67
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## 139	73	24	89	61	67	46	64
64							
## 140	83	48	91	49	66	42	62
62							

## 141	93	72	93	37	65	35	59
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## 142	72	72	88	37	61	31	59
59							
## 143	72	93	88	30	61	29	59
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## 144	87	93	87	37	61	27	59
59							
## 145	77	NA	93	46	61	26	68
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## 146	68	93	78	48	61	25	68
68							
## 147	60	93	73	58	61	24	68
68							
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68							
## 149	57	NA	44	70	54	27	68
68							
## 150	50	NA	42	77	57	26	68
68							
## 151	50	NA	44	73	57	25	69
69							
## 152	50	76	42	81	61	42	69
69							
## 153	56	NA	47	81	61	43	69
69							
## 154	68	87	54	81	64	44	69
69							
## 155	68	76	64	81	64	45	69
69							
## 156	63	81	82	70	68	46	69
69							
## 157	62	81	77	76	68	60	69
69							
## 158	62	NA	82	70	73	53	69
69							
## 159	62	NA	71	69	73	46	69
69							
## 160	62	NA	66	65	73	60	69
69							
## 161	62	NA	81	81	73	58	69
69							
## 162	58	NA	93	65	65	57	69
69							
## 163	54	75	87	48	57	53	54
54							
## 164	54	NA	87	30	54	47	54
54							
## 165	54	NA	87	33	57	42	54
54							

## 166	54	NA	93	37	61	33	54
54							
## 167	70	NA	93	41	57	24	54
54							
## 168	54	NA	93	41	57	24	54
54							
## 169	54	NA	93	45	58	21	64
64							
## 170	50	NA	66	45	57	20	64
64							
## 171	NA	NA	62	45	57	20	64
64							
## 172	58	NA	54	55	61	21	64
64							
## 173	62	61	47	63	61	22	64
64							
## 174	66	NA	58	68	61	35	64
64							
## 175	76	NA	47	69	65	32	66
66							
## 176	71	NA	63	72	64	44	66
66							
## 177	71	NA	75	79	69	50	66
66							
## 178	76	NA	75	61	64	44	66
66							
##	Jerusalem						
## 1	NA						
## 2	50						
## 3	50						
## 4	50						
## 5	50						
## 6	50						
## 7	50						
## 8	50						
## 9	50						
## 10	50						
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## 102	61
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## 121	60
## 122	60
## 123	60

## 124	60
## 125	60
## 126	60
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## 128	77
## 129	77
## 130	77
## 131	77
## 132	77
## 133	77
## 134	77
## 135	77
## 136	77
## 137	77
## 138	77
## 139	66
## 140	55
## 141	44
## 142	44
## 143	44
## 144	44
## 145	53
## 146	53
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## 158	72
## 159	72
## 160	72
## 161	72
## 162	72
## 163	40
## 164	40
## 165	40
## 166	40
## 167	40
## 168	40
## 169	53
## 170	53
## 171	53
## 172	53
## 173	53

```

## 174      53
## 175      75
## 176      75
## 177      75
## 178      75

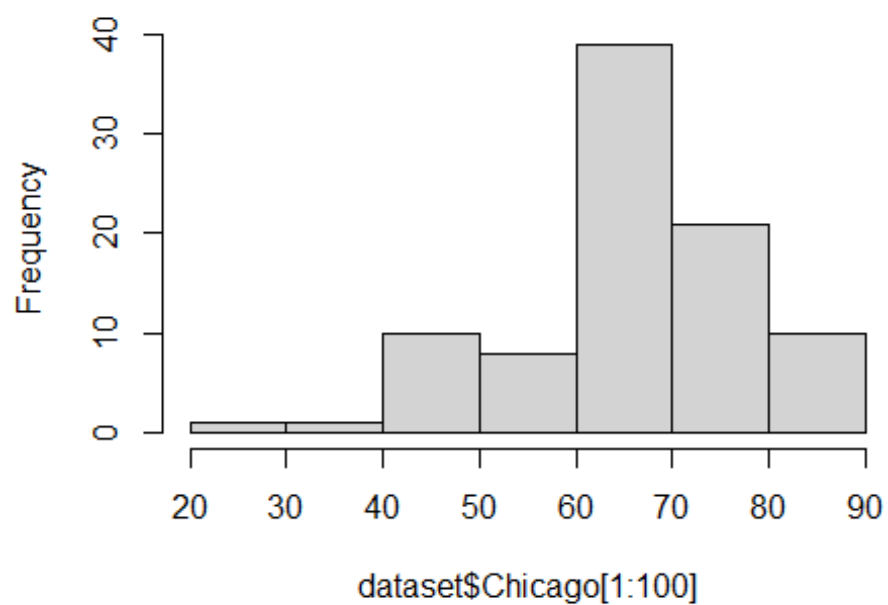
str(dataset)

## 'data.frame':   178 obs. of  37 variables:
## $ datetime      : chr  "01-10-2012 12:00" "01-10-2012 13:00" "01-10-
2012 14:00" "01-10-2012 15:00" ...
## $ Vancouver     : int  NA 76 76 76 77 78 78 79 79 80 ...
## $ Portland      : int  NA 81 80 80 80 79 79 78 78 77 ...
## $ San.Francisco  : int  NA 88 87 86 85 84 83 82 81 80 ...
## $ Seattle       : int  NA 81 80 80 79 79 78 77 77 76 ...
## $ Los.Angeles    : int  NA 88 88 88 88 88 88 88 88 88 ...
## $ San.Diego      : int  NA 82 81 81 81 80 80 80 79 79 ...
## $ Las.Vegas      : int  NA 22 21 21 21 21 21 21 20 20 ...
## $ Phoenix        : int  NA 23 23 23 23 24 24 24 25 25 ...
## $ Albuquerque    : int  NA 50 49 49 49 49 49 49 49 49 ...
## $ Denver         : int  NA 62 62 62 62 63 63 63 64 64 ...
## $ San.Antonio    : int  NA 93 92 92 92 92 92 91 91 91 ...
## $ Dallas         : int  NA 87 86 86 86 86 86 85 85 85 ...
## $ Houston        : int  NA 93 92 90 89 88 87 86 84 83 ...
## $ Kansas.City    : int  NA 71 70 70 70 69 69 69 68 68 ...
## $ Minneapolis    : int  NA 67 66 66 65 65 64 64 63 63 ...
## $ Saint.Louis    : int  NA 71 71 71 71 71 71 72 72 72 ...
## $ Chicago        : int  NA 71 70 70 70 69 69 69 68 68 ...
## $ Nashville      : int  NA 100 99 99 99 99 98 98 98 97 ...
## $ Indianapolis   : int  NA 76 76 76 76 76 76 76 76 76 ...
## $ Atlanta        : int  NA 94 94 94 94 94 94 94 94 94 ...
## $ Detroit        : int  NA 76 75 75 74 74 73 72 72 71 ...
## $ Jacksonville   : int  NA 88 87 87 87 86 86 85 85 84 ...
## $ Charlotte      : int  NA 87 87 87 87 87 87 87 87 87 ...
## $ Miami          : int  NA 83 82 82 82 81 81 81 80 80 ...
## $ Pittsburgh     : int  NA 93 93 93 93 93 93 93 93 93 ...
## $ Toronto        : int  NA 82 81 79 77 76 74 72 70 69 ...
## $ Philadelphia   : int  NA 71 70 70 69 69 68 68 67 67 ...
## $ New.York       : int  NA 58 57 57 57 57 56 56 56 55 ...
## $ Montreal       : int  NA 93 91 87 84 80 76 72 68 64 ...
## $ Boston         : int  NA 68 68 68 68 68 68 68 68 68 ...
## $ Beersheba      : int  NA 50 51 51 52 54 55 56 57 58 ...
## $ Tel.Aviv.District: int  NA 63 62 62 62 62 63 63 63 64 ...
## $ Eilat          : int  25 22 22 22 22 23 23 23 24 24 ...
## $ Haifa          : int  NA 51 51 51 51 51 51 51 51 51 ...
## $ Nahariyya      : int  NA 51 51 51 51 51 51 51 51 51 ...
## $ Jerusalem      : int  NA 50 50 50 50 50 50 50 50 50 ...

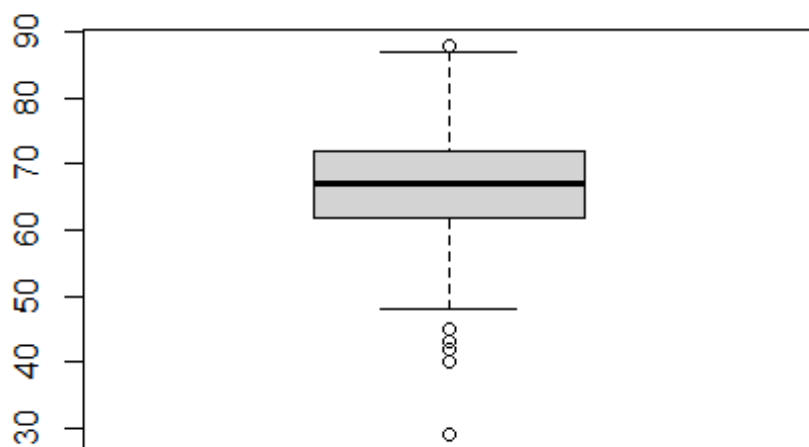
hist(dataset$Chicago[1:100])

```

Histogram of dataset\$Chicago[1:100]

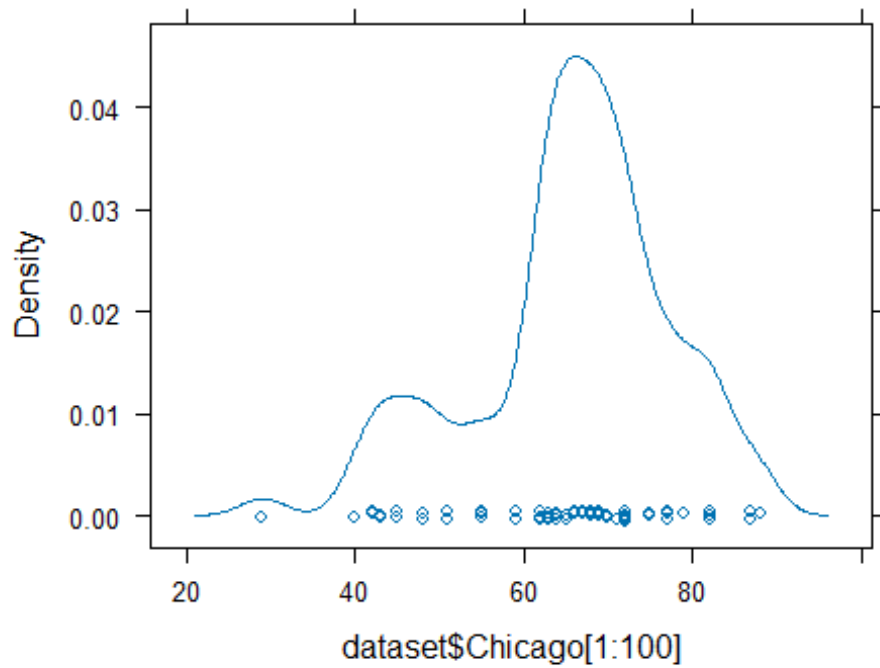


```
boxplot(dataset$Chicago[1:100])
```

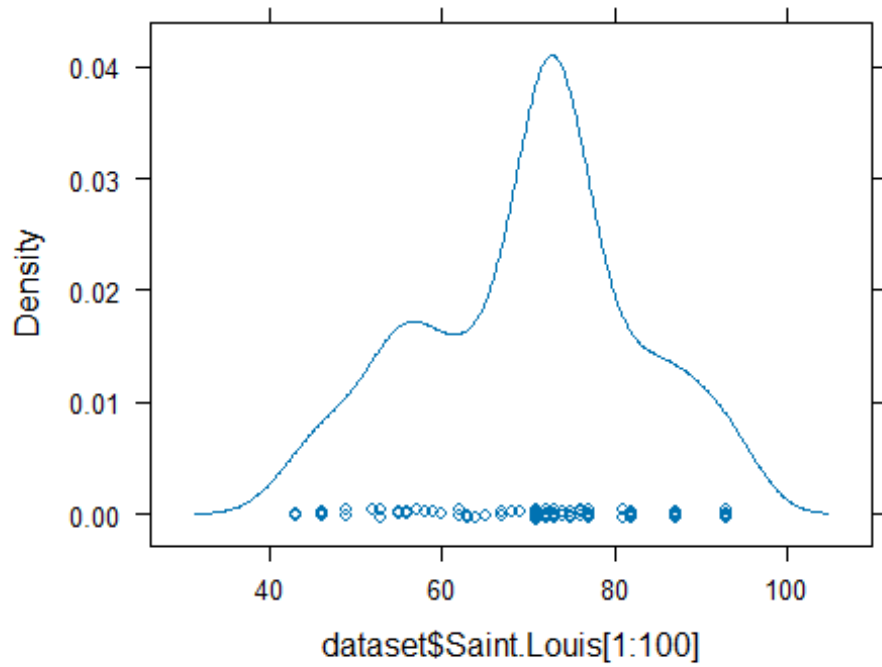


```
install.packages("lattice")
```

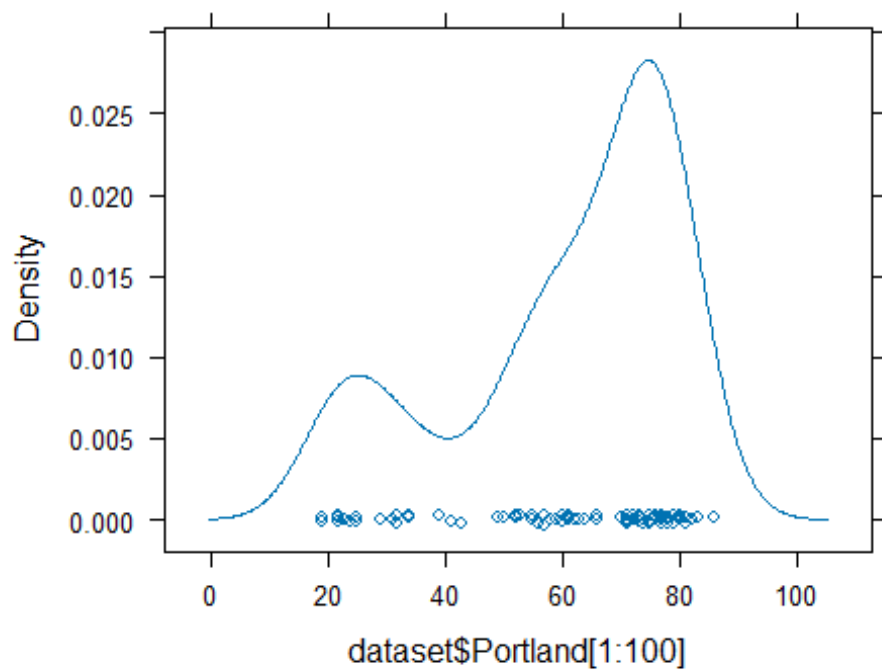
```
## Warning: package 'lattice' is in use and will not be installed  
library(lattice)  
densityplot(dataset$Chicago[1:100])
```



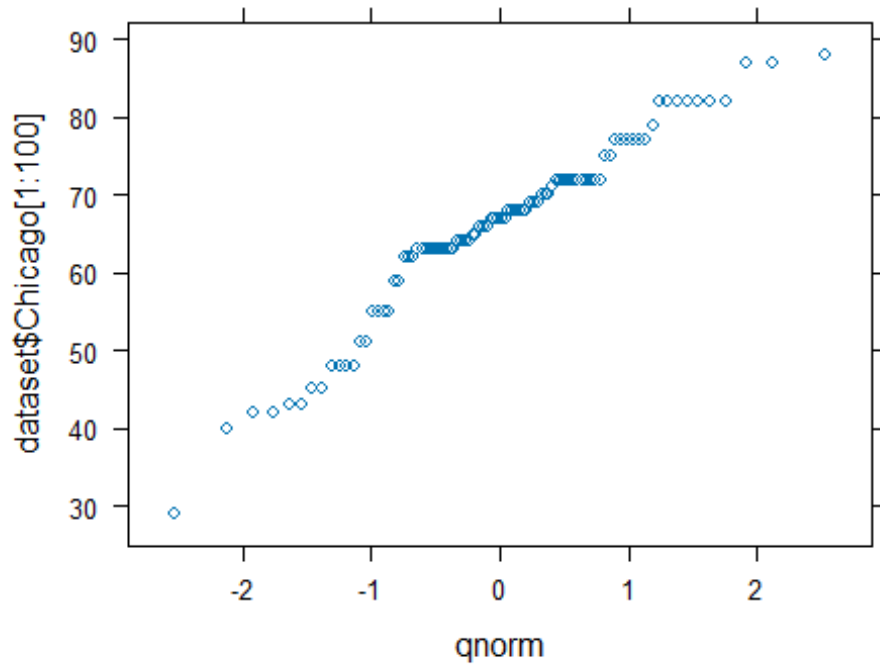
```
densityplot(dataset$Saint.Louis[1:100])
```



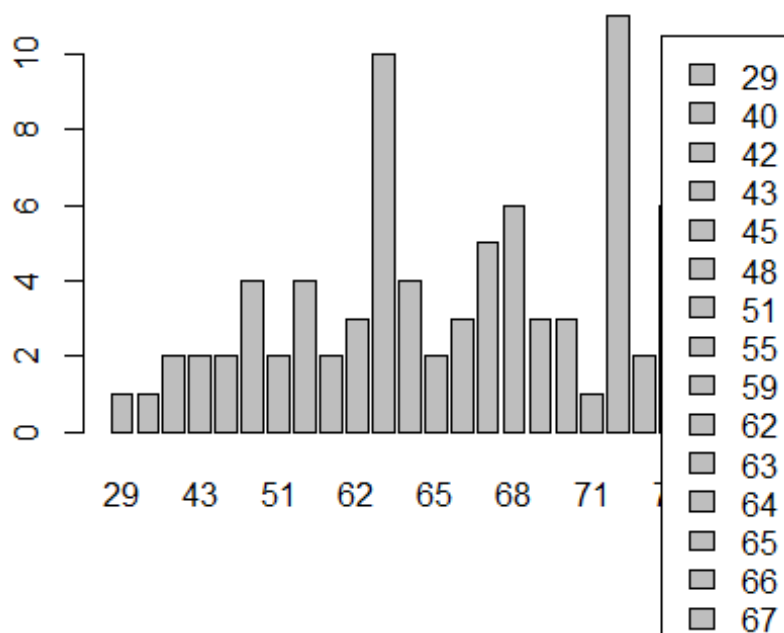
```
densityplot(dataset$Portland[1:100])
```



```
qqmath(dataset$Chicago[1:100])
```

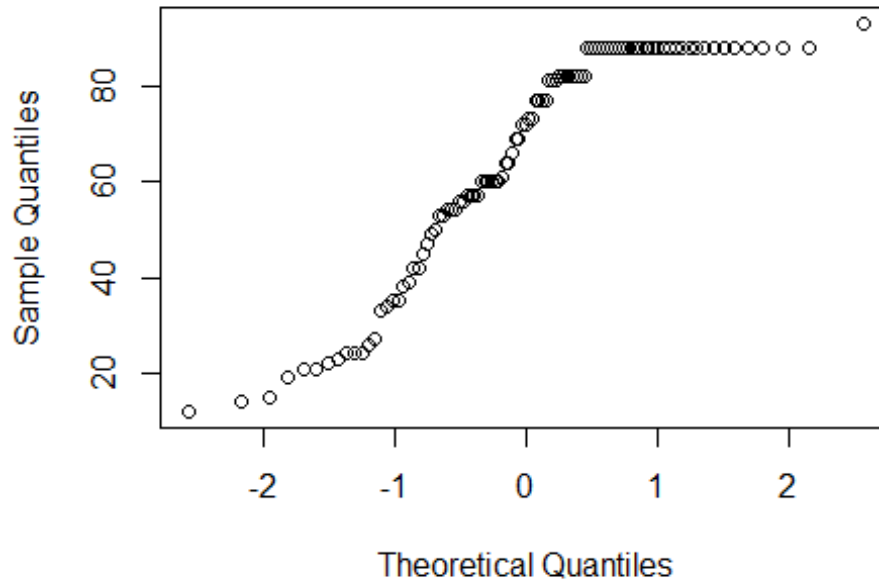


```
barplot(table(dataset$Chicago[1:100]), beside = TRUE, legend.text = TRUE)
```



```
qqnorm(dataset$Los.Angeles[1:100])
```

Normal Q-Q Plot

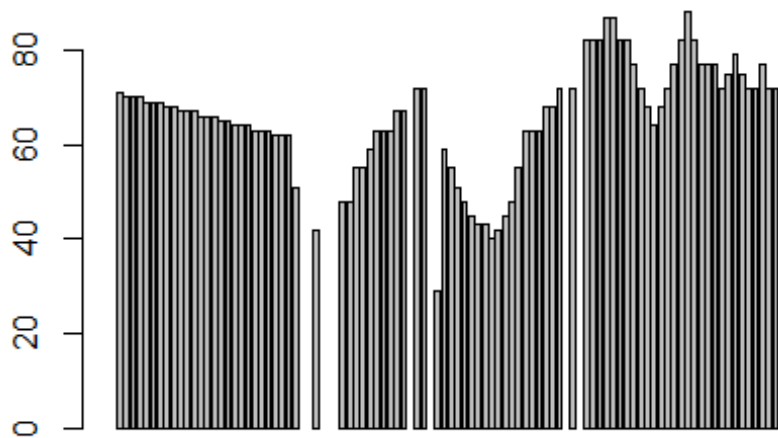


```
str(dataset)
```

```
## 'data.frame':  178 obs. of  37 variables:
## $ datetime      : chr  "01-10-2012 12:00" "01-10-2012 13:00" "01-10-
2012 14:00" "01-10-2012 15:00" ...
## $ Vancouver     : int  NA 76 76 76 77 78 78 79 79 80 ...
## $ Portland      : int  NA 81 80 80 80 79 79 78 78 77 ...
## $ San.Francisco  : int  NA 88 87 86 85 84 83 82 81 80 ...
## $ Seattle       : int  NA 81 80 80 79 79 78 77 77 76 ...
## $ Los.Angeles    : int  NA 88 88 88 88 88 88 88 88 88 ...
## $ San.Diego      : int  NA 82 81 81 81 80 80 80 79 79 ...
## $ Las.Vegas      : int  NA 22 21 21 21 21 21 21 20 20 ...
## $ Phoenix        : int  NA 23 23 23 23 24 24 24 25 25 ...
## $ Albuquerque    : int  NA 50 49 49 49 49 49 49 49 49 ...
## $ Denver         : int  NA 62 62 62 62 63 63 63 64 64 ...
## $ San.Antonio    : int  NA 93 92 92 92 92 92 91 91 91 ...
## $ Dallas         : int  NA 87 86 86 86 86 86 85 85 85 ...
## $ Houston        : int  NA 93 92 90 89 88 87 86 84 83 ...
## $ Kansas.City    : int  NA 71 70 70 70 69 69 69 68 68 ...
## $ Minneapolis    : int  NA 67 66 66 65 65 64 64 63 63 ...
## $ Saint.Louis    : int  NA 71 71 71 71 71 71 72 72 72 ...
## $ Chicago        : int  NA 71 70 70 70 69 69 69 68 68 ...
## $ Nashville      : int  NA 100 99 99 99 99 98 98 98 97 ...
## $ Indianapolis   : int  NA 76 76 76 76 76 76 76 76 76 ...
## $ Atlanta        : int  NA 94 94 94 94 94 94 94 94 94 ...
## $ Detroit        : int  NA 76 75 75 74 74 73 72 72 71 ...
## $ Jacksonville   : int  NA 88 87 87 87 86 86 85 85 84 ...
```

```
## $ Charlotte      : int  NA 87 87 87 87 87 87 87 87 87 ...
## $ Miami          : int  NA 83 82 82 82 81 81 81 80 80 ...
## $ Pittsburgh     : int  NA 93 93 93 93 93 93 93 93 93 ...
## $ Toronto        : int  NA 82 81 79 77 76 74 72 70 69 ...
## $ Philadelphia   : int  NA 71 70 70 69 69 68 68 67 67 ...
## $ New.York       : int  NA 58 57 57 57 57 56 56 56 55 ...
## $ Montreal       : int  NA 93 91 87 84 80 76 72 68 64 ...
## $ Boston         : int  NA 68 68 68 68 68 68 68 68 68 ...
## $ Beersheba      : int  NA 50 51 51 52 54 55 56 57 58 ...
## $ Tel.Aviv.District: int  NA 63 62 62 62 62 63 63 63 64 ...
## $ Eilat          : int  25 22 22 22 22 23 23 23 24 24 ...
## $ Haifa          : int  NA 51 51 51 51 51 51 51 51 51 ...
## $ Nahariyya      : int  NA 51 51 51 51 51 51 51 51 51 ...
## $ Jerusalem      : int  NA 50 50 50 50 50 50 50 50 50 ...

dataset$Portland <- factor(dataset$Portland)
barplot(dataset$Chicago[1:100])
```



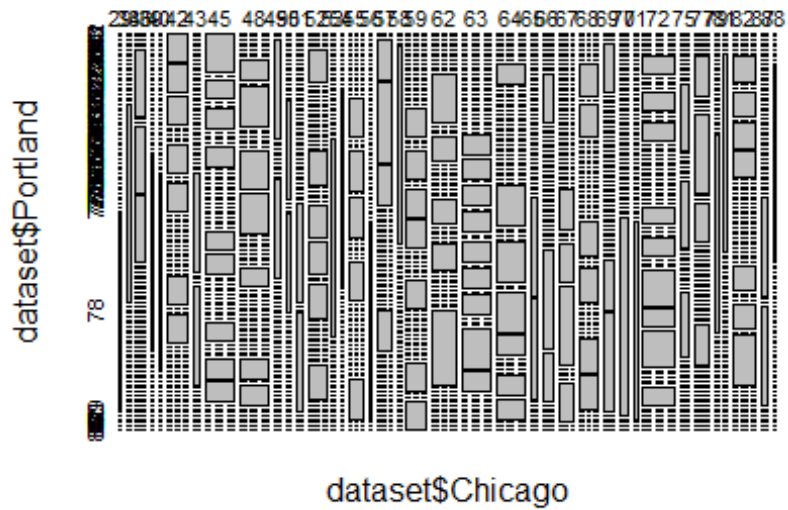
```
install.packages("ggplot2")

## Warning: package 'ggplot2' is in use and will not be installed

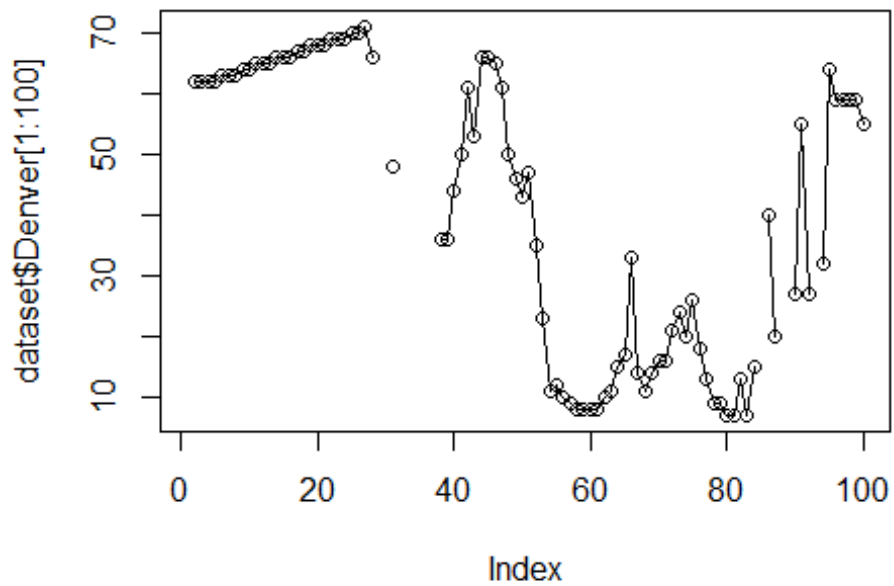
library(ggplot2)

mosaicplot(dataset$Chicago ~ dataset$Portland)
```

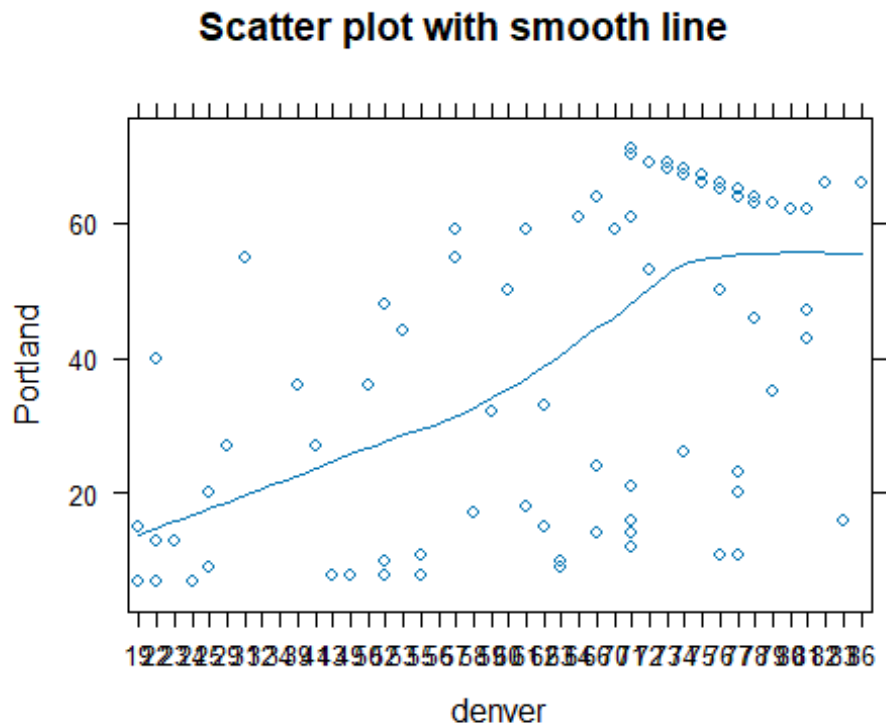

NULL



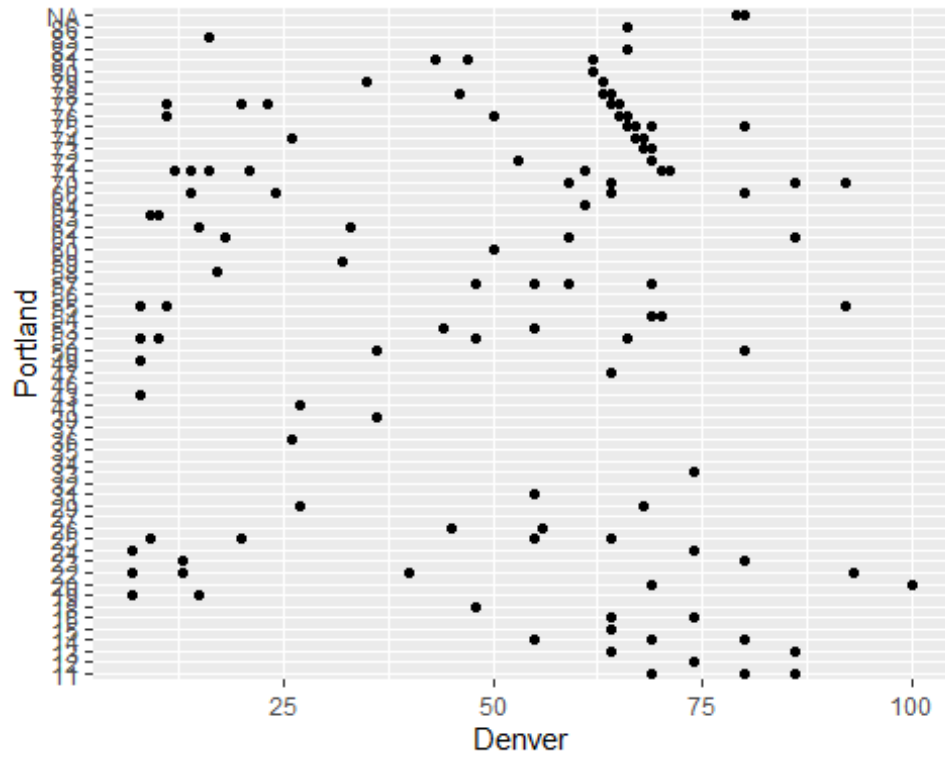
```
plot(dataset$Denver[1:100])  
lines(dataset$Denver[1:100])
```



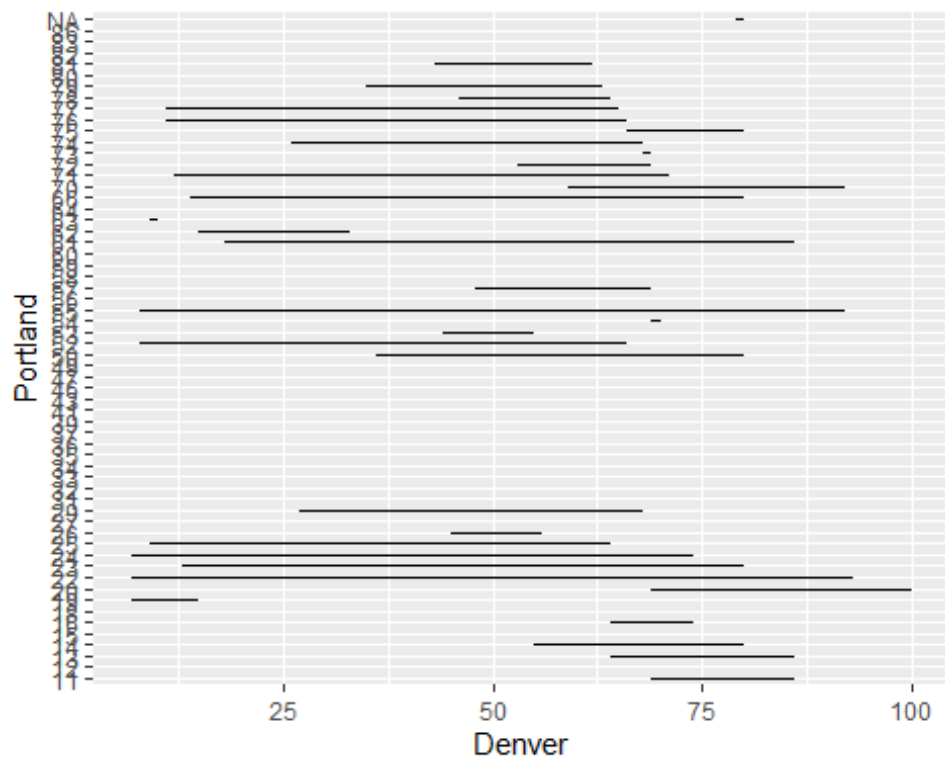
```
library(lattice)
xyplot(Denver[1:100] ~ Portland[1:100], data = dataset,
type = c("p", "smooth"),
xlab = "denver",
ylab = "Portland",
main = "Scatter plot with smooth line")
```



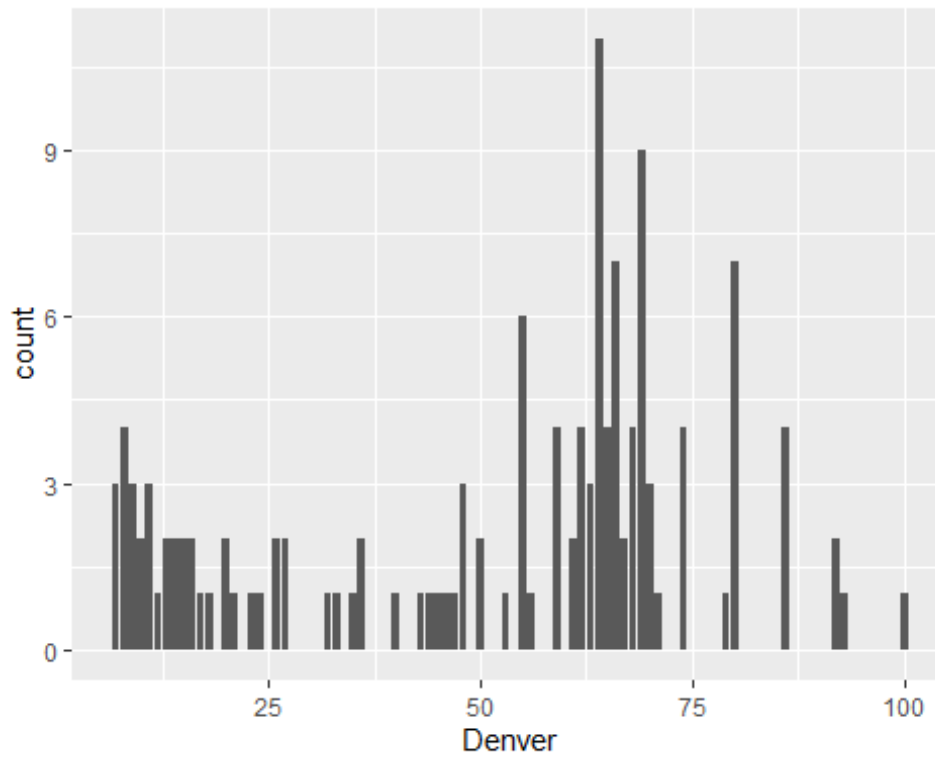
```
ggplot(data = dataset, aes(x = Denver, y = Portland)) + geom_point()
## Warning: Removed 45 rows containing missing values (`geom_point()`).
```



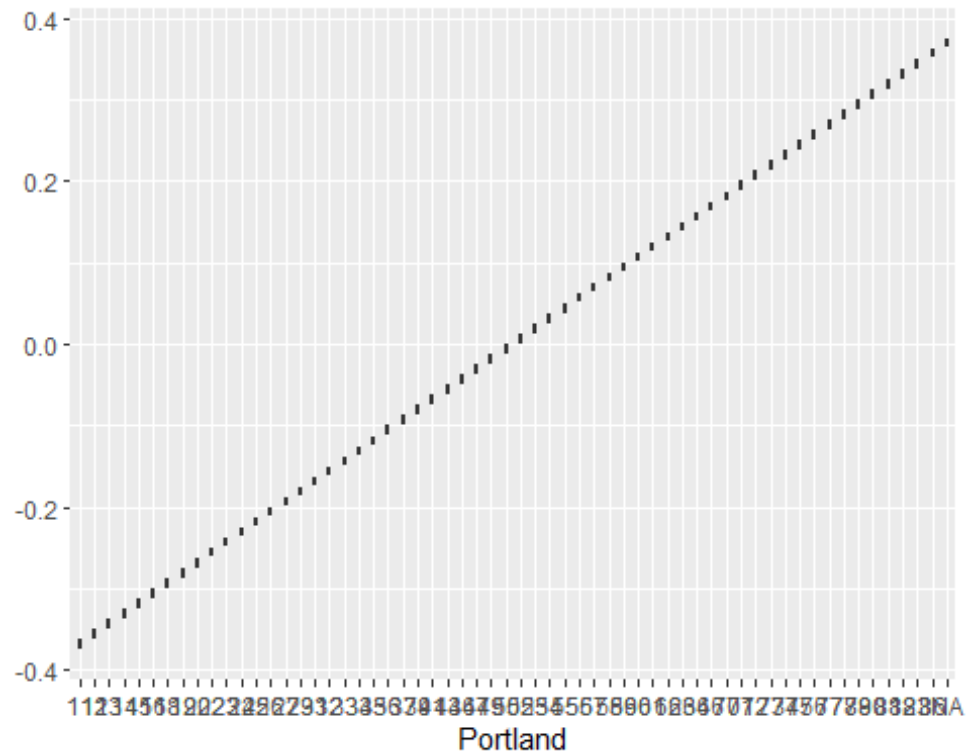
```
ggplot(data = dataset, aes(x = Denver, y = Portland)) + geom_line()
## Warning: Removed 45 rows containing missing values (`geom_line()`).
```



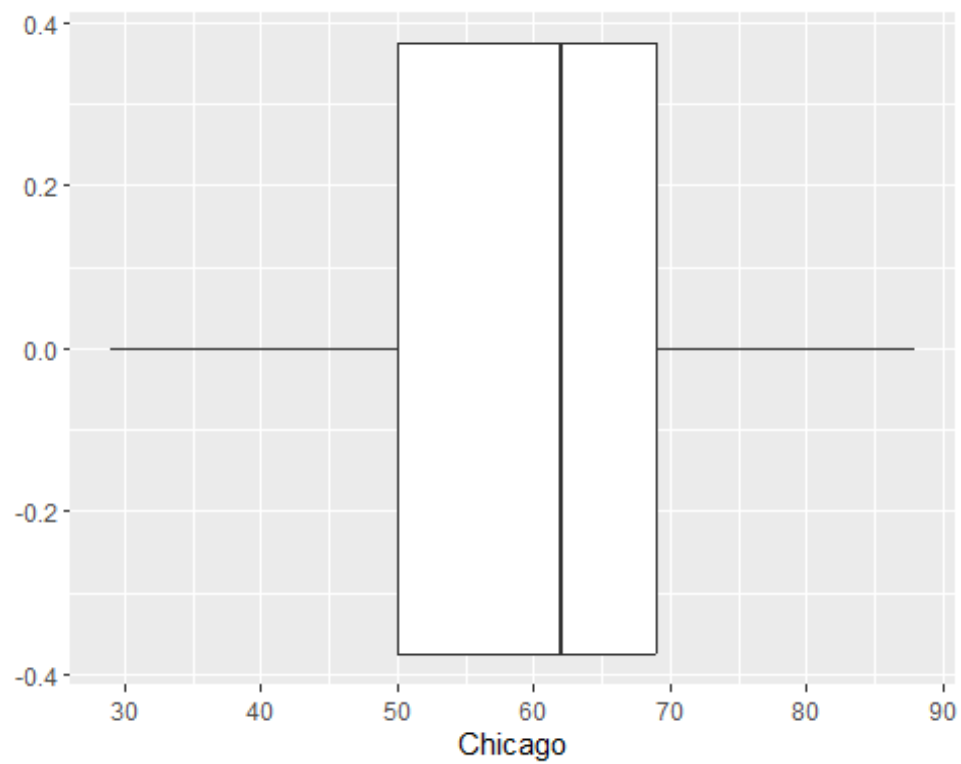
```
ggplot(data = dataset, aes(x = Denver)) + geom_bar()  
## Warning: Removed 45 rows containing non-finite values (`stat_count()`).
```



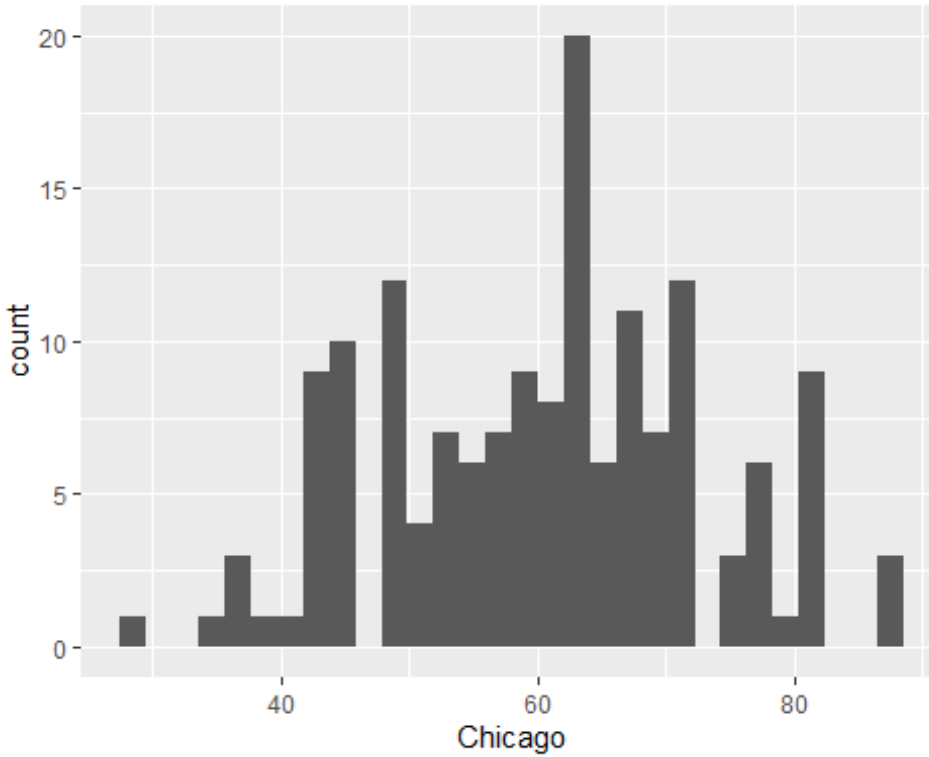
```
ggplot(data = dataset, aes(x = Portland)) + geom_boxplot()
```



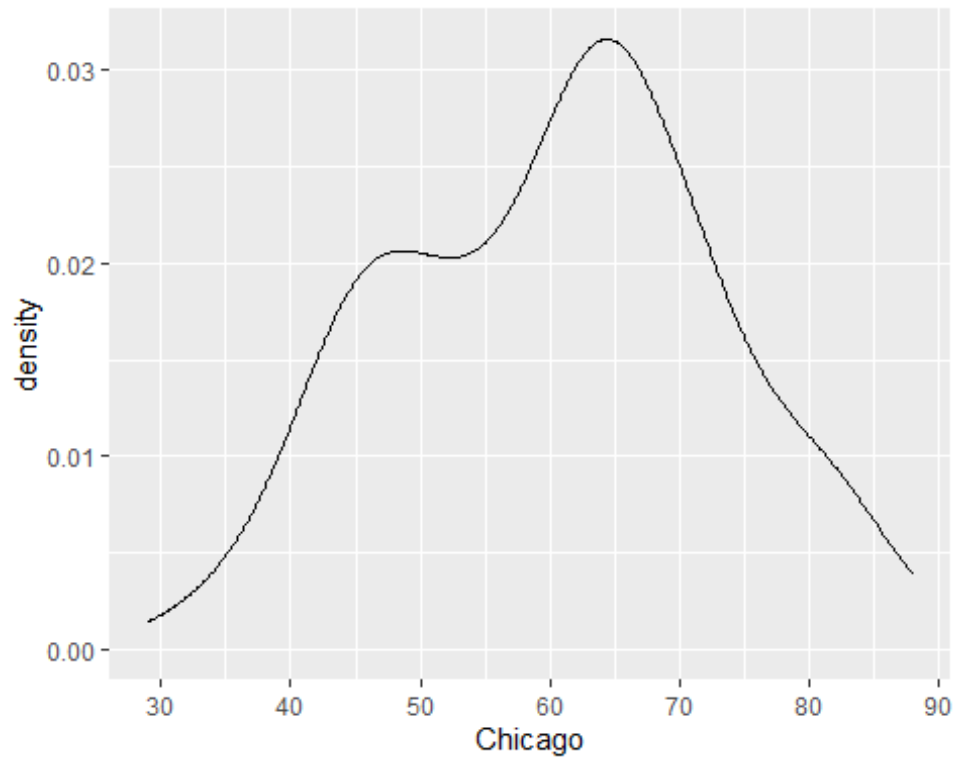
```
ggplot(data = dataset, aes(x = Chicago)) + geom_boxplot()
## Warning: Removed 21 rows containing non-finite values (`stat_boxplot()`).
```



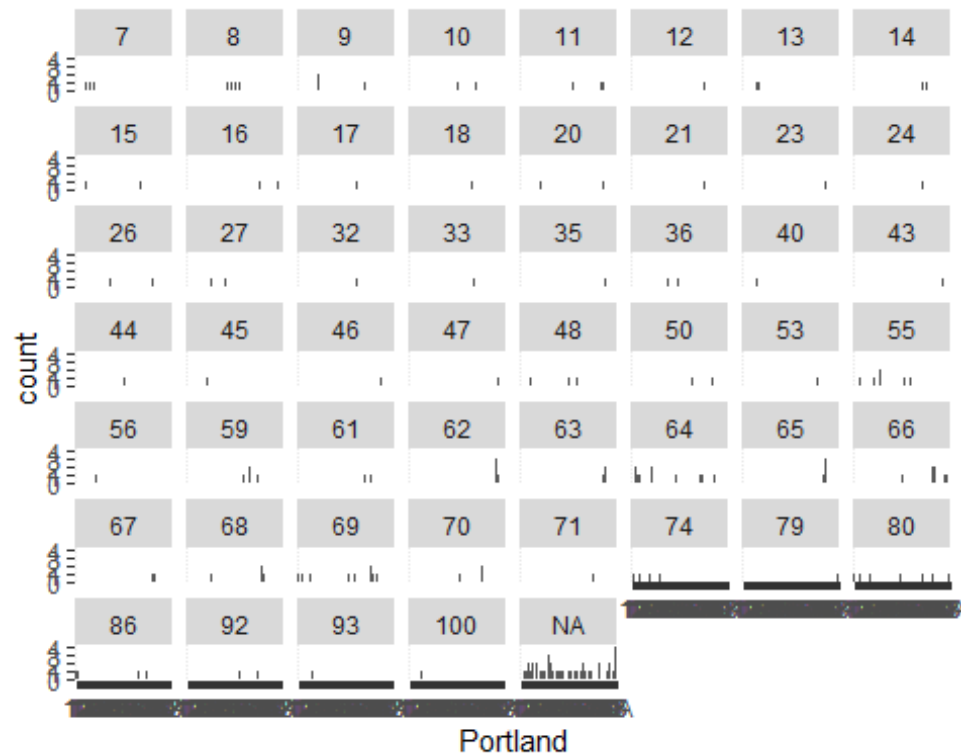
```
ggplot(data = dataset, aes(x = Chicago)) + geom_histogram()  
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.  
## Warning: Removed 21 rows containing non-finite values (`stat_bin()`).
```



```
ggplot(data = dataset, aes(x = Chicago)) + geom_density()  
## Warning: Removed 21 rows containing non-finite values (`stat_density()`).
```

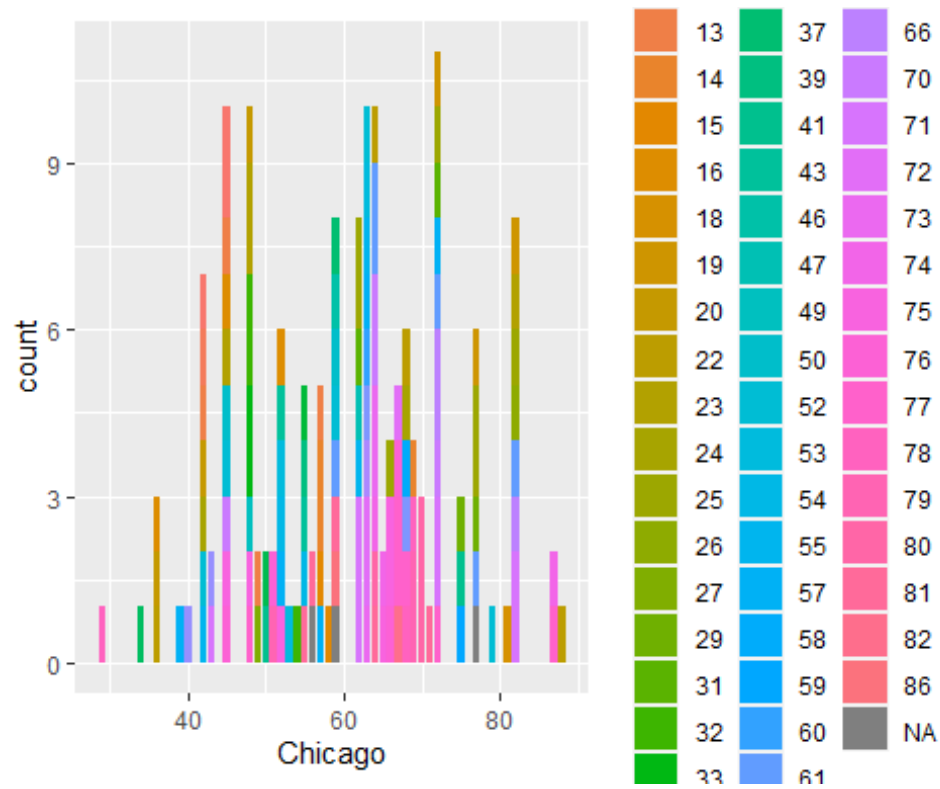


```
ggplot(data = dataset, aes(x = Portland)) + geom_bar() + facet_wrap(~Denver)
```



```
ggplot(data = dataset, aes(x = Chicago, fill = Portland)) + geom_bar()
```

```
## Warning: Removed 21 rows containing non-finite values (`stat_count()`).
```



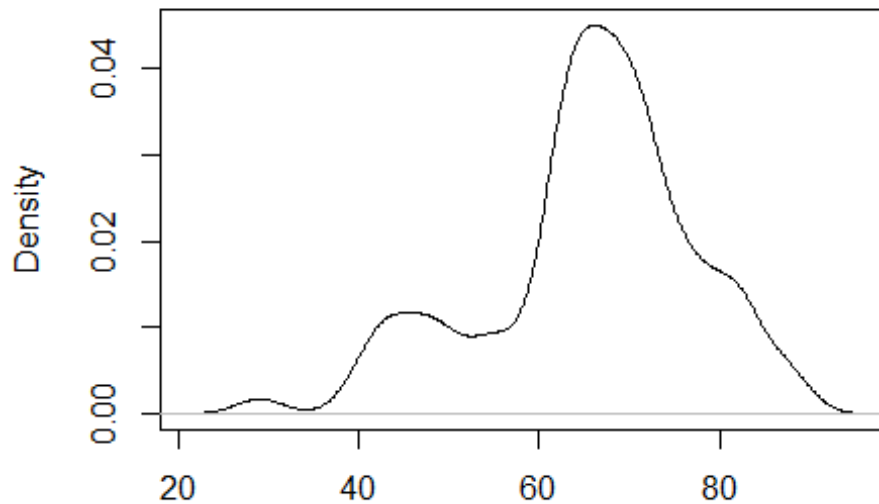
```
subset_data <- na.omit(dataset$Chicago[1:100])
```

```
# Calculate the density using the updated subset  
density_result <- density(subset_data)
```

```
# Plot the density  
plot(density_result)
```

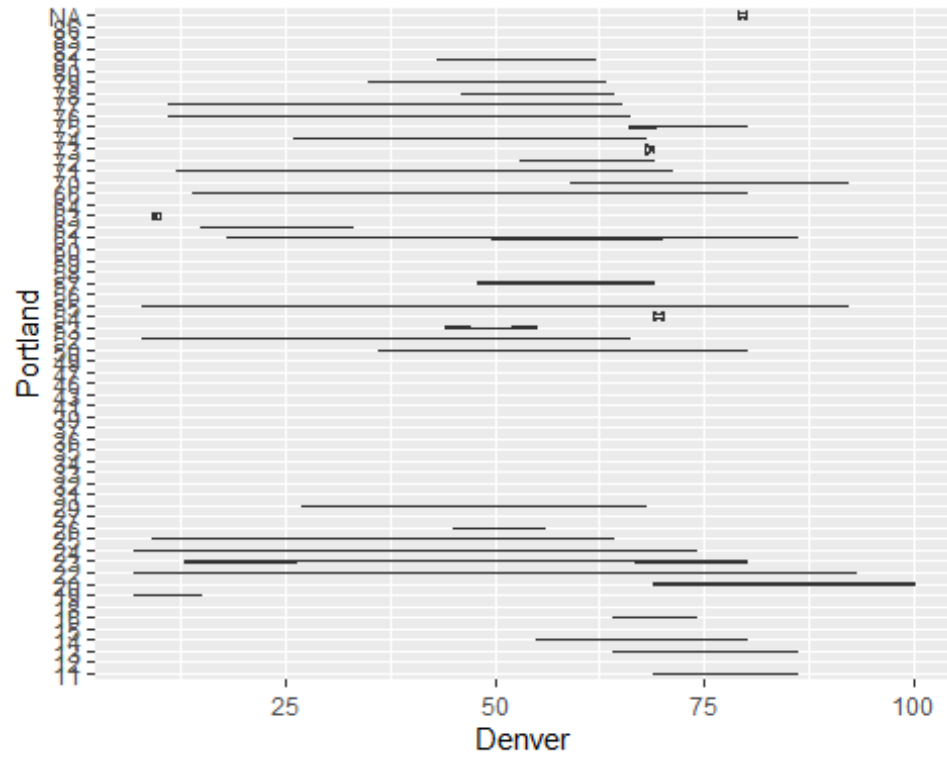


```
density(x = subset_data)
```



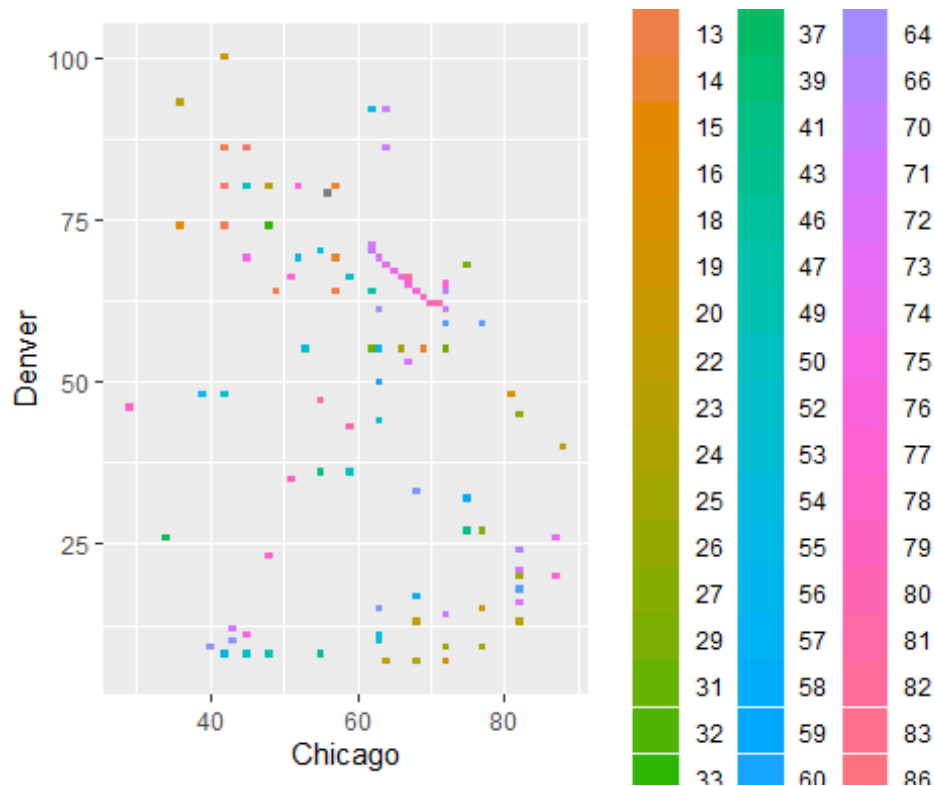
N = 90 Bandwidth = 2.663

[illegible]



```
ggplot(dataset, aes(x = Chicago, y =Denver, fill = Portland)) +
  geom_tile()
```

```
## Warning: Removed 55 rows containing missing values (`geom_tile()`).
```



```
ggplot(dataset, aes(x = Chicago, y = Portland)) +
  geom_point() +
  geom_smooth()

## `geom_smooth()` using method = 'loess' and formula = 'y ~ x'
## Warning: Removed 21 rows containing non-finite values (`stat_smooth()`).
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
parametric,
## : span too small. fewer data values than degrees of freedom.
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
parametric,
## : pseudoinverse used at 41.985
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
parametric,
## : neighborhood radius 3.015
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
parametric,
## : reciprocal condition number 0
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
parametric,
## : at 45.015
```

```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
parametric,
## : radius 0.000225

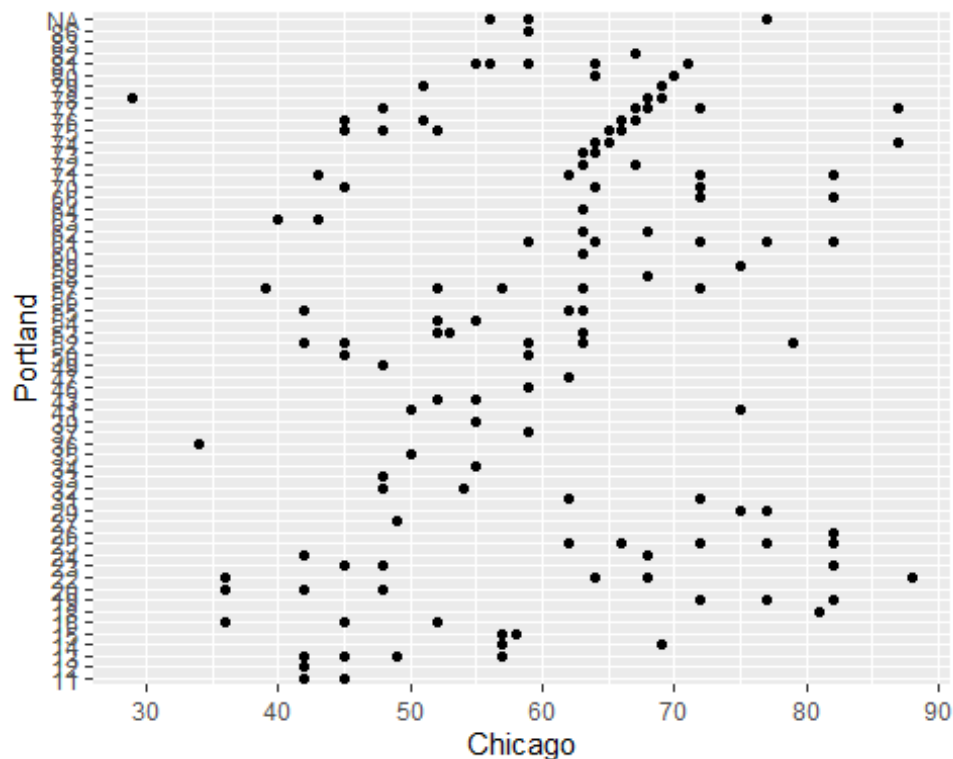
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
parametric,
## : all data on boundary of neighborhood. make span bigger

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
parametric,
## : There are other near singularities as well. 0.000225

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
parametric,
## : zero-width neighborhood. make span bigger

## Warning: Computation failed in `stat_smooth()`
## Caused by error in `predLoess()`:
## ! NA/NaN/Inf in foreign function call (arg 5)

## Warning: Removed 21 rows containing missing values (`geom_point()`).
```



```
ggplot(dataset, aes(x = Chicago, y = Portland)) +
  geom_point() + geom_smooth(method = "lm")

## `geom_smooth()` using formula = 'y ~ x'

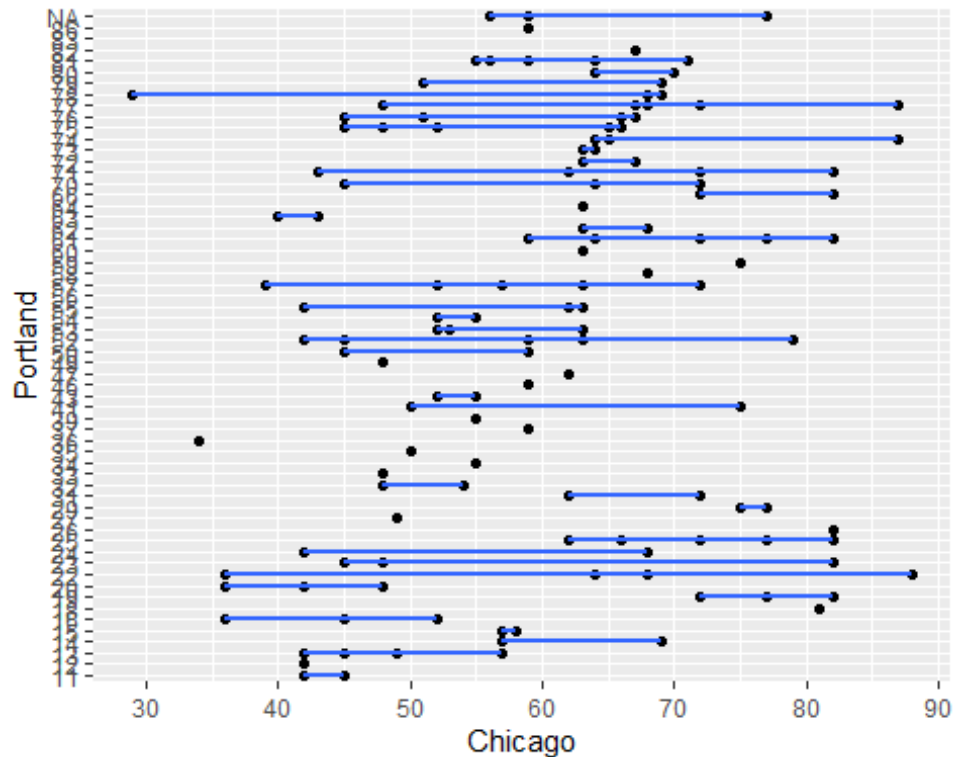
## Warning: Removed 21 rows containing non-finite values (`stat_smooth()`).
```

```
## Warning in qt((1 - level)/2, df): NaNs produced
## Warning in qt((1 - level)/2, df): NaNs produced
## Warning in qt((1 - level)/2, df): NaNs produced
## Warning in qt((1 - level)/2, df): NaNs produced
## Warning in qt((1 - level)/2, df): NaNs produced
## Warning in qt((1 - level)/2, df): NaNs produced
## Warning in qt((1 - level)/2, df): NaNs produced
## Warning in qt((1 - level)/2, df): NaNs produced
## Warning in qt((1 - level)/2, df): NaNs produced
## Warning in qt((1 - level)/2, df): NaNs produced
## Warning: Removed 21 rows containing missing values (`geom_point()`).
## Warning in max(ids, na.rm = TRUE): no non-missing arguments to max;
returning
## -Inf
## Warning in max(ids, na.rm = TRUE): no non-missing arguments to max;
returning
## -Inf
## Warning in max(ids, na.rm = TRUE): no non-missing arguments to max;
returning
## -Inf
## Warning in max(ids, na.rm = TRUE): no non-missing arguments to max;
returning
## -Inf
## Warning in max(ids, na.rm = TRUE): no non-missing arguments to max;
returning
## -Inf
```

```
## Warning in max(ids, na.rm = TRUE): no non-missing arguments to max;
returning
## -Inf
```

```
## Warning in max(ids, na.rm = TRUE): no non-missing arguments to max;
returning
## -Inf
```

```
## Warning in max(ids, na.rm = TRUE): no non-missing arguments to max;
returning
## -Inf
```



```
ggplot(dataset, aes(x = Chicago, y = Portland)) + geom_violin()
```

```
## Warning: Removed 21 rows containing non-finite values (`stat_ydensity()`).
```

```
## Warning: Groups with fewer than two data points have been dropped.
```

```
## Groups with fewer than two data points have been dropped.
```

```
## Groups with fewer than two data points have been dropped.
```

```
## Groups with fewer than two data points have been dropped.
```

```
## Groups with fewer than two data points have been dropped.
```

```
## Groups with fewer than two data points have been dropped.
```

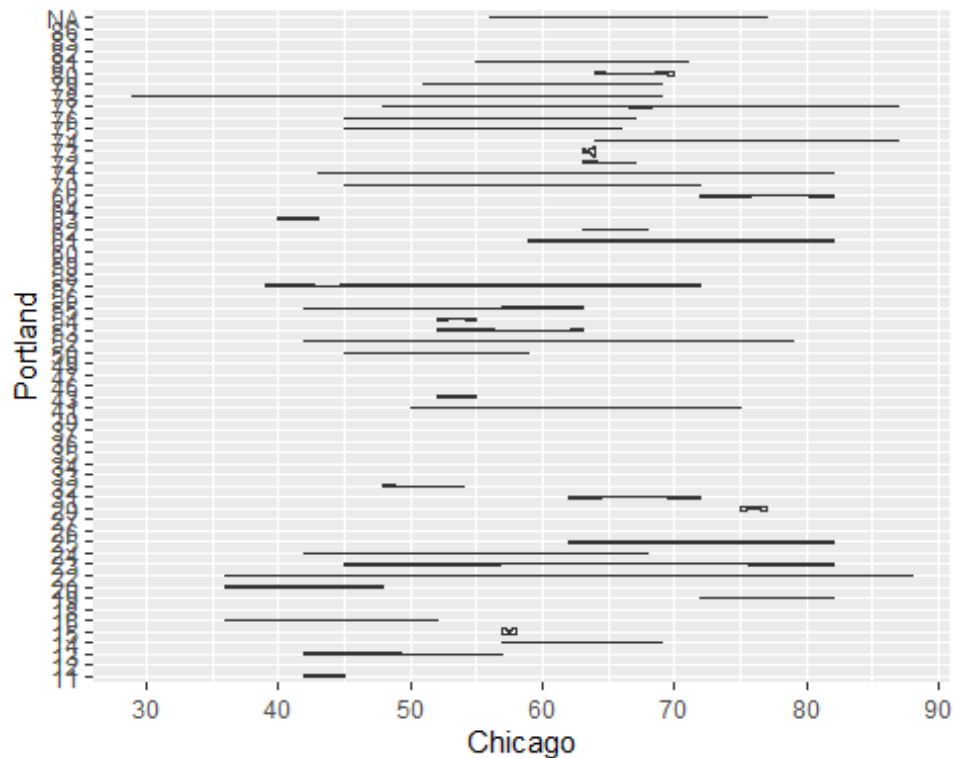
```
## Groups with fewer than two data points have been dropped.
```

```
## Groups with fewer than two data points have been dropped.
```

```
## Groups with fewer than two data points have been dropped.
```

```
## Groups with fewer than two data points have been dropped.
```

```
## Groups with fewer than two data points have been dropped.
## Groups with fewer than two data points have been dropped.
## Groups with fewer than two data points have been dropped.
## Groups with fewer than two data points have been dropped.
## Groups with fewer than two data points have been dropped.
## Groups with fewer than two data points have been dropped.
## Groups with fewer than two data points have been dropped.
## Groups with fewer than two data points have been dropped.
```



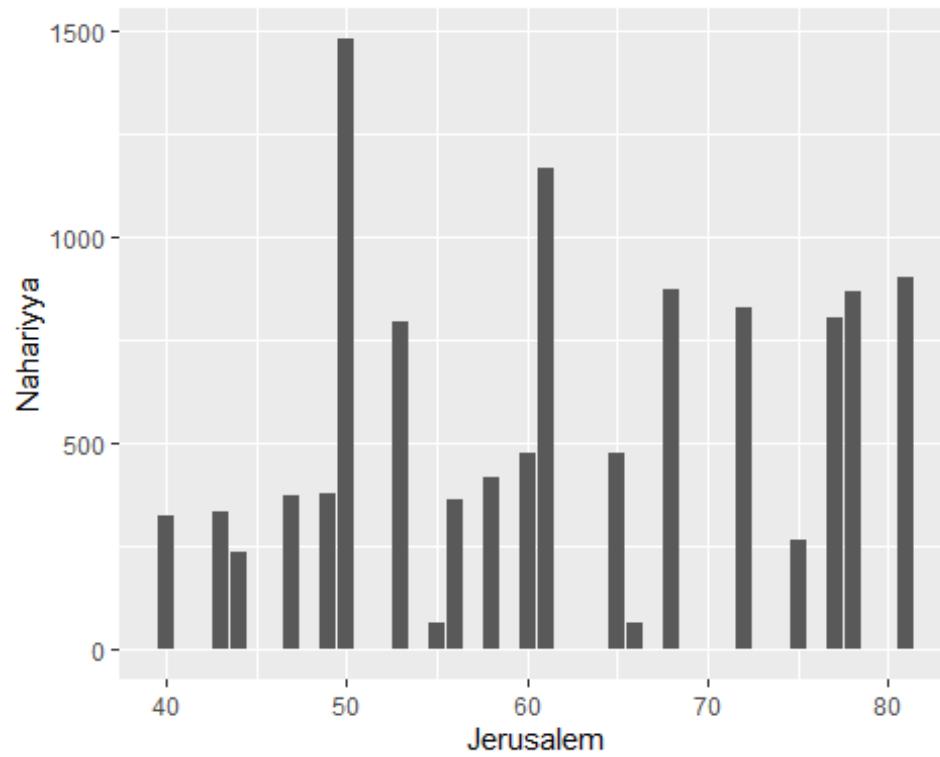
```
str(dataset)
```

```
## 'data.frame':    178 obs. of  37 variables:
## $ datetime      : chr  "01-10-2012 12:00" "01-10-2012 13:00" "01-10-2012 14:00" "01-10-2012 15:00" ...
## $ Vancouver     : int   NA 76 76 76 77 78 78 79 79 80 ...
## $ Portland      : Factor w/ 59 levels "11","12","13",...: NA 56 55 55 55 54 54 53 53 52 ...
## $ San.Francisco : int   NA 88 87 86 85 84 83 82 81 80 ...
## $ Seattle       : int   NA 81 80 80 79 79 78 77 77 76 ...
## $ Los.Angeles   : int   NA 88 88 88 88 88 88 88 88 88 ...
## $ San.Diego     : int   NA 82 81 81 81 80 80 80 79 79 ...
## $ Las.Vegas     : int   NA 22 21 21 21 21 21 21 20 20 ...
## $ Phoenix       : int   NA 23 23 23 23 24 24 24 25 25 ...
## $ Albuquerque   : int   NA 50 49 49 49 49 49 49 49 49 ...
## $ Denver        : int   NA 62 62 62 62 63 63 63 64 64 ...
## $ San.Antonio   : int   NA 93 92 92 92 92 92 91 91 91 ...
## $ Dallas        : int   NA 87 86 86 86 86 86 85 85 85 ...
```

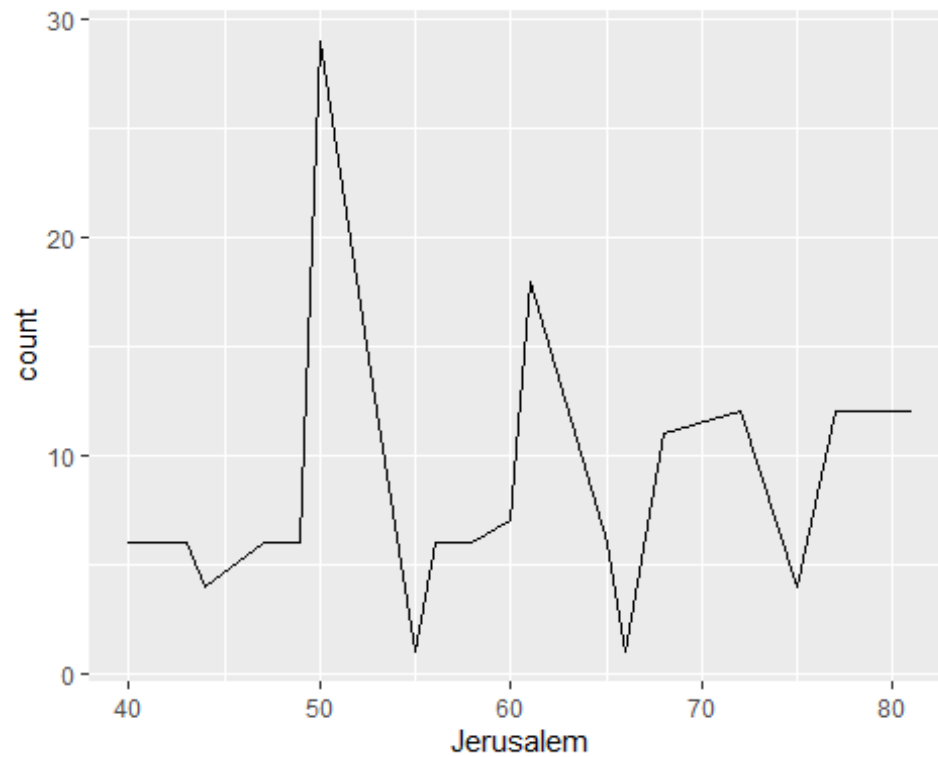
```
## $ Houston      : int  NA 93 92 90 89 88 87 86 84 83 ...
## $ Kansas.City  : int  NA 71 70 70 70 69 69 69 68 68 ...
## $ Minneapolis  : int  NA 67 66 66 65 65 64 64 63 63 ...
## $ Saint.Louis  : int  NA 71 71 71 71 71 71 72 72 72 ...
## $ Chicago      : int  NA 71 70 70 70 69 69 69 68 68 ...
## $ Nashville    : int  NA 100 99 99 99 99 98 98 98 97 ...
## $ Indianapolis : int  NA 76 76 76 76 76 76 76 76 76 ...
## $ Atlanta      : int  NA 94 94 94 94 94 94 94 94 94 ...
## $ Detroit      : int  NA 76 75 75 74 74 73 72 72 71 ...
## $ Jacksonville : int  NA 88 87 87 87 86 86 85 85 84 ...
## $ Charlotte    : int  NA 87 87 87 87 87 87 87 87 87 ...
## $ Miami        : int  NA 83 82 82 82 81 81 81 80 80 ...
## $ Pittsburgh   : int  NA 93 93 93 93 93 93 93 93 93 ...
## $ Toronto      : int  NA 82 81 79 77 76 74 72 70 69 ...
## $ Philadelphia : int  NA 71 70 70 69 69 68 68 67 67 ...
## $ New.York     : int  NA 58 57 57 57 57 56 56 56 55 ...
## $ Montreal     : int  NA 93 91 87 84 80 76 72 68 64 ...
## $ Boston       : int  NA 68 68 68 68 68 68 68 68 68 ...
## $ Beersheba    : int  NA 50 51 51 52 54 55 56 57 58 ...
## $ Tel.Aviv.District: int  NA 63 62 62 62 62 63 63 63 64 ...
## $ Eilat        : int   25 22 22 22 22 23 23 23 24 24 ...
## $ Haifa        : int  NA 51 51 51 51 51 51 51 51 51 ...
## $ Nahariyya    : int  NA 51 51 51 51 51 51 51 51 51 ...
## $ Jerusalem    : int  NA 50 50 50 50 50 50 50 50 50 ...
```

```
ggplot(dataset, aes(x = Jerusalem , y = Nahariyya)) +
  geom_bar(stat = "identity")
```

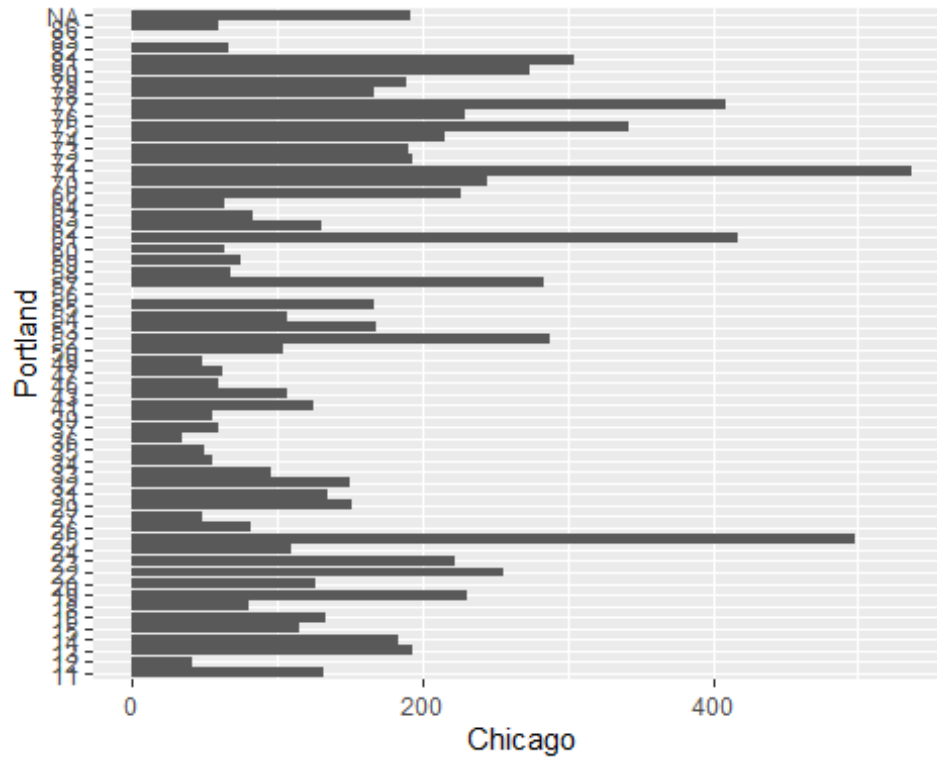
```
## Warning: Removed 1 rows containing missing values (`position_stack()`).
```

```
ggplot(dataset, aes(x = Jerusalem )) +  
  geom_line(stat = "count")  
## Warning: Removed 1 rows containing non-finite values (`stat_count()`).
```



```
ggplot(dataset, aes(x = Chicago, y = Portland)) +  
  geom_bar(stat = "identity")  
## Warning: Removed 21 rows containing missing values (`position_stack()`).
```



R Markdown

This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see <http://rmarkdown.rstudio.com>.

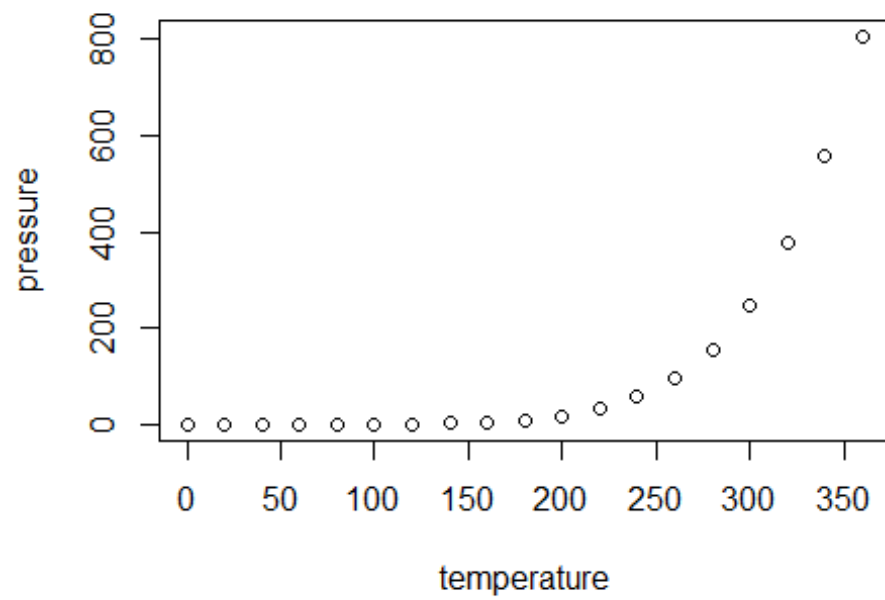
When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

```
summary(cars)
```

```
##      speed      dist
##  Min.   : 4.0    Min.   :  2.00
##  1st Qu.:12.0    1st Qu.: 26.00
##  Median :15.0    Median : 36.00
##  Mean   :15.4    Mean   : 42.98
##  3rd Qu.:19.0    3rd Qu.: 56.00
##  Max.   :25.0    Max.   :120.00
```

Including Plots

You can also embed plots, for example:



Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R code that generated the plot.